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ABSTRACT

The DIALIB Project was a 3-year experiment that investigated the potential of the public library as a "linking agent" between the public and the many machine-readable data bases currently accessible via the telephone using online terminals. The study investigated the following questions: (1) Is online search of use to the patrons of a public library? (2) What impact does such a system have on both the library and the patron? (3) What conditions are required for successful use of online reference search in the public library? (4) What are the financial and marketing aspects of such a service? The four participating Cooperative Information Networks libraries performed 2,173 searches during the project. The principal user groups were graduate students, educators, technical professionals, and librarians. In planning for online search in the public library, nine key requirements were identified. It was determined that a market exists for public library searches of existing data bases among employees and operators of small businesses, college students, and local government officials. The traditionally trained public librarian does have skills that are applicable to the skills required for online searching. Contrary to expectations, no problems were experienced in the mechanics of billing and fee collection, and comments from patrons were favorable to paying for the service. (Author/JAB)

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FINAL REPORT

INVESTIGATION OF THE PUBLIC LIBRARY AS A LINKING AGENT TO MAJOR SCIENTIFIC, EDUCATIONAL, SOCIAL, AND ENVIRONMENTAL DATA BASES

LMSC-D560986 1 October 1977

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Palo Alto, California 94304

FOREWORD

This report presents the results of the DIALIB project, a study supported by the National Science Foundation,* to investigate online bibliographic search in a public library setting. We have attempted to capture not only the formal evaluative material, but also the very valuable informal comments expressed by participants.

The report is given in two volumes:

Final Report. This volume describes the project, and summarizes the evaluation material given in the Annex.

Annex: Evaluation Report. This volume presents the detailed project evaluation prepared by Applied Communication Research. It provides extensive statistical tables, and detailed analyses of the results obtained.

Copies of the two volumes are available from Lockheed Information Systems while the supply lasts, and thereafter from the National Technical Information Service (NTIS).

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Note: Any opinions, findings, conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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- Dr. Colin Mick, Dr. Alice Ahlgren, and Ms. Carol Van Jepmond, Applied Communication Research, Inc.
- Board of the Cooperative Information Network, and the CIN Online Committee, Mrs. Patricia Bergsing and Mr. Don Fuller
- The directors of the CIN libraries: Mr. Homer Fletcher, City Librarian, San Jose Public Library; Miss Barbara Campbell, Santa Clara County Librarian; Mr. Karl Vollmayer, City Librarian, Redwood City Public Library; Mr. James Buckley, San Mateo County Librarian
- The reference librarians: see Appendix C for the complete list, but special thanks to Charlotte Sakai, San Jose Public Library; Lois Thomas, Santa Clara County Library; Sally Drew and Lisa Naef, Redwood City Public Library; and Ann Scott and Nancy DeWath, San Mateo County Library
- The Oversight Committee: Mrs. Virginia Ross Geller, Geller and Ross; Professor Albert Rubenstein, Northwestern University; Mr. Forrest Carhart, Director, METRO; Professor Charles Bourne, University of California, Institute of Library Research; Mr. Douglas Ferguson, Stanford Libraries
- Evelyn Helmer, Publicity Coordinator
- The non-CIN libraries, Marion Huttner and Carol Vantine, Minneapolis INFORM system; Mrs. Judith Neufeld, Long Island Library Resources Council; Ann Landtroop, Houston Public Library; Jean Davenport, Cleveland Public Library; Linda Hill and Jane Colwin, INFO II, Tulsa City-County Library

Our thanks go to all the participants listed in Appendix C.

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EXECUTIVE SUMMARY

This executive summary follows the same general structure as the report; the reader can refer to the appropriate section for further information on any of the topics.

1. DESCRIPTION OF THE STUDY

The DIALIB Project was a 3-year experiment that investigated the potential of the public library as a "linking agent" between the public and the many machine-readable data bases currently accessible via the telephone line using online terminals. Free service was offered for the first year, one-half the cost of the search service charges were passed on to the patron for the second year, and the full cost of search service was charged in the third year. Four public libraries in Northern California, members of the Cooperative Information Network (CIN), were the major participants in the study; additional libraries in other parts of the country were introduced for a 6-month period in the middle of the second year to obtain subjective evaluations. Two of the original CIN libraries carried through for the third year. The substantive evaluation data were obtained from the CIN libraries; the other libraries provided subjective comments and evaluations.

The study investigated the following questions:

- Is online search of use to the patrons of a public library?
- What impact does such a system have on both the library and the patron?
- What conditions are required for successful use of online reference search in the public library?
- What are the financial and marketing aspects of such a service?

The investigation was conducted by Lockheed Information Systems, and Lockheed also provided the DIALOG online information retrieval service. Evaluation was performed by Applied Communication Research (ACR), a nonprofit behavioral research firm in Palo Alto, California. The project was reviewed by an oversight committee of five experts in various specialties of public librarianship, marketing, and information science.

During the DIALIB experiment, ACR gathered data on user characteristics and attitudes, cost of search, offline and online search time, data bases used, etc. In addition, through interviews with the participants and statements submitted by the participants, some of the intangible aspects of the experiment were documented.

2. ONLINE REFERENCE RETRIEVAL

The Lockheed DIALOG Information Retrieval Service was used in the study. The libraries accessed the system using a typewriter-like terminal that is acoustically coupled to the telephone line. (An ordinary handset is placed in a receptacle of the terminal.) Approximately 18 data bases in education, science, technology, social science, and business were available at the start of the Project. This grew to 36 data bases by the end of the second year, and to more than 60 by the end of the third year.

3. EVALUATION SUMMARY

- Are the results generalizable to other public libraries?

A great similarity of time and cost elements was found between pairs of libraries during the pay period, despite differences in library populations, organizational structure, etc. The time and cost data should therefore be applicable to other public libraries. There are differences in subjective judgments on various aspects of online search in the public library, as indicated in the comments given in Appendix B, but we feel that librarians will be able to find comments and information pertinent to their particular library situation.

- How many searches were performed?

The four CIN libraries performed 1,236 searches during the first year of free service, and 611 searches during the second year when one-half the usual DIALOG costs were passed on to the patron. In the third year, when full DIALOG costs were charged, 326 searches were performed by the remaining two libraries.

- Who were the users of the service?

The principal user groups were graduate students, educators, technical professionals, and librarians. Most online searches were requested either as part of the patron's job or for research papers.

- Were the users satisfied?

About 70% of the patrons during both the free and pay periods indicated that the results of their search were of significant value to them.

- What is the cost of a search?

An average search costs about $6 in staff time (about one hour of offline preparation and online search), and about $20 in online search charges (about $11 for online time and $9 for printouts). This does not include the terminal cost of $125 a month. About 60% of the searches had a search service cost of less than $20.

- Should the user be present at the search?

The user was invited to be present while the search was conducted more frequently in the pay period (50%) than in the free period (15%). This supports previous findings that experienced searchers tend to allow the user to participate in the search more than do less experienced searchers. In addition, fears that patron presence slows down the search proved to be unjustified, particularly in the pay period.

- What does it take to make online service "come alive" in a public library?

Personnel and funding determine whether online search comes alive: the attitudes and support of the library director and the head reference librarian are crucial to the success of the venture. Unless both are firmly committed to work for and support online searching, the probability of success is at best marginal. The personalities and commitment of individual librarians are also a key factor.

A source of funding must be found to cover the staff costs, search service costs, terminal rental, and communication costs. These funds may be provided through the library budget, through user fees, or a combination of both.

- What background should the public library have for online search service to be successful?

It is important that the library have some experience in dealing with in-depth reference questions, and have identified the target group of users of this service.

- What impact has the DIALIB experiment had in the field?

Great interest was shown in the many papers and presentations given during the 3-year period, and over 600 copies of the Two-Year Interim Report were distributed.

(We have not investigated whether any public libraries have begun offering online reference as a result of DIALIB; we encourage any such libraries to contact us so that we can incorporate this information into future editions of this final report.)

- Did all the DIALIB libraries continue to offer online service?

Two of the four CIN libraries have retained online search service, San Jose Public Library and San Mateo County Library. Of the other libraries that participated for

6 months, Minneapolis (INFORM), Tulsa City-County (INFO II), and Cleveland (Facts for a Fee) have retained online search. The Long Island Library Resources Council offers online search only for very special requests, while Houston no longer offers the service.

- What would you do differently if you were repeating this experiment?

We should have planned how to deal with various levels of demand. In particular, during the 1 year of unrestricted free searching, the demand for the service was too great for convenient library operation. Each of the CIN libraries should have set a limit on the number of searches that could be handled online, and established policies concerning use of online services. This would have avoided the overload condition during the first year, and would have made the librarians more amenable to publicizing the service during the subsequent pay periods.

We found that branch librarians are reluctant to solicit requests for online search when a central library is performing the actual search. Since much of this reluctance is due to lack of acquaintance with online search, and a lack of feeling of participation, we should have trained at least one person in each branch to act as the "local agent" of online search in the branch.

4. PLANNING FOR ONLINE SEARCH

Nine key requirements for online search in the public library were identified:

(1) Need to establish the scope and limits of service
(2) Need to carefully consider the impact of the service on staff time
(3) Importance of staff attitudes toward the role of reference services, and toward fee-based search (where applicable)
(4) Importance of obtaining suitable funding for both the search service and the supporting staff
(5) Need for promotional planning
(6) Need for ongoing staff training

(7) Need for a "critical mass" of searches to maintain staff proficiency
(8) Need to maintain adequate support documentation
(9) Need for developing management and evaluation policies for the online service

Although all the public libraries in the DIALIB study used the fee-for-service approach, online search and fee for service are not inexorably linked. However, if free service is to be offered, it is crucial that policies be set up that assure the ability of the library to deliver effective service to its chosen clientele. This was not done during the DIALIB study free period, and the CIN librarians were overwhelmed by the demand for online searches.

5. CONCLUSIONS

Marketing

The DIALIB experiment has shown that there is a market for existing data bases. It is made up of employees of small businesses; of students from colleges and universities who do not otherwise have convenient access to online searching; of individuals who are starting a business, doing personal research or investigation; and of local government officials. Other users of the service came from government agencies of all sizes and descriptions, and small high-technology firms.

Online search and the public library

The traditionally trained public librarian does have a variety of skills that are directly applicable to the kinds of skills required for online searching. Many librarians involved in DIALIB, who had no previous training in online search, became skilled searchers. However, the majority of public librarians spend very little time in lengthy, in-depth, personalized searches for a patron, and the availability of online search in the public library raises philosophical questions of how much service is to be provided for whom, when, where, and at what level.

- Fee for service in the public library

An important result of the DIALIB experiment was that, contrary to expectations, no problems were experienced in the mechanics of billing and fee collection, and that comments by the patrons were favorable to paying a fee for the search service. The only problem associated with charging for this specialized reference service was dealing with the philosophical concept of fee for service. Once this was accepted by the administration, the actual mechanics of collection and patron acceptance offered no difficulties. Furthermore, there has been no tendency to extend the concept to traditional services within the participating libraries. We should note, though, that since a study of non-uers was not made, we do not know whether fees deterred some individuals from using the service.

In this final report we have tried to indicate the time and cost elements, and the many organizational and staff aspects involved in online search in the public library. We hope that such factual information will be useful to those on both sides of the fee-for-service question.

Section 1
DESCRIPTION OF THE STUDY

It is now possible to perform online computer searches of large bibliographic data bases ranging from one-quarter of a million to over a million citations each. These data bases span the spectrum from science and technology to social sciences and business. Several retrieval services such as the Lockheed DIALOG® system and the System Development Corporation's ORBIT system offer such service at rates ranging from $35 to $150 an hour, depending on the data base used. In addition, the user must pay the communication cost (the cost of a direct telephone call to California or approximately $8 an hour via a local Tymshare or Telenet port) and terminal rental cost (approximately $150 a month, including maintenance).

A decade ago, such online access to large bibliographic data bases was restricted to large governmental organizations that had the financial assets needed to prepare large data bases and to access them in an efficient manner. As a result of reduced computer and communications costs, this access has been extended to industrial users and universities at a reasonable cost through more than 15 services in the United States (Ref. 1). As yet, however, no extensive use of these services is made by the general public. What is required, as shown schematically in Fig. 1-1, is a "linking agent" to bring together the data base resources and the general user public.

1.1 THE DIALIB STUDY

In late 1973, Lockheed Information Systems submitted a proposal to the National Science Foundation to conduct a study to examine means by which the public library could act as a linking agent to the general public in providing online information retrieval services.

In 1974, the User Support Program of the Office of Science Information Service,* National Science Foundation, established a grant to enable Lockheed Information

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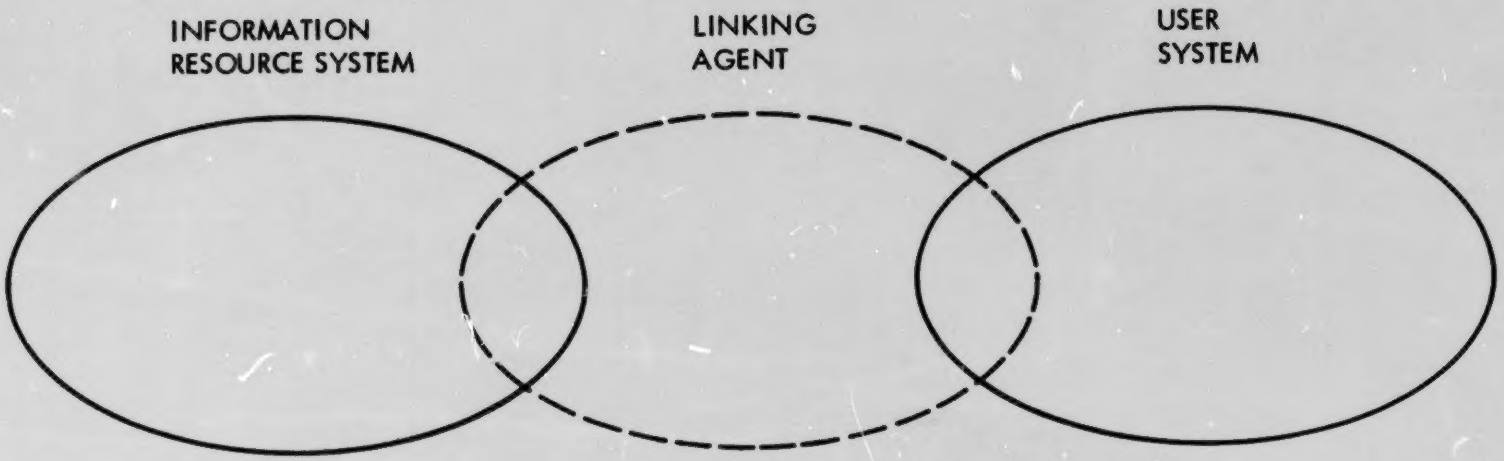
*Now the Division of Science Information.


INFORMATION RESOURCE SYSTEM
LINKING AGENT
USER SYSTEM

DATA BASES IN:
- SCIENCE
- TECHNOLOGY
- BUSINESS
- SOCIAL SCIENCE
- EDUCATION

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.
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- PUBLIC LIBRARIES
- UNIVERSITY LIBRARIES
- PRIVATE SEARCH SERVICES

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- CITY AND COUNTY GOVERNMENT
- PUBLIC SERVICE ORGANIZATIONS
- SMALL BUSINESS
- PRIVATE INDIVIDUALS

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Fig. 1-1 Concept of a Linking Agent Between the Public and Information Resources

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Systems to work with the Cooperative Information Network (CIN), an information cooperative in Northern California, to establish online search services using the DIALOG System (see Appendix E) in four Cooperative Information Network public libraries. The project is referred to as the DIALIB project. Applied Communication Research, Inc. (ACR), a nonprofit behavioral research firm in Palo Alto, California, was selected to perform an independent project evaluation.

The NSF grant summary was as follows:

> The purpose of this project is to conduct an operational experiment to test the feasibility, economic viability, and utility to users of using the existing library systems to provide public access to computerized (online) scientific and technical information services (query, search, and retrieval) heretofore unavailable and inaccessible to either the general public or the scientist/engineer in smaller organizations; and to determine the impact of such services on both libraries and service users. The project entails a two-year program to be carried out in several libraries of the Cooperative Information Network of San Mateo and Santa Clara Counties in California. The online retrieval capability, which will be provided by the Lockheed DIALOG system, offers access to a wide range of engineering, science, psychology, agriculture, and educational technology data bases, including NTIS, CAIN, ERIC, INSPEC, COMPENDEX, and PANDEX. Statistical data are to be collected and analyzed with respect to (1) utility and utilization of public libraries as technical information dissemination centers, and (2) marketing variables and marketing methods for motivating new users of services providing online access to scientific and technical information. Basic study areas include the investigation and analysis of the financial, administrative, user, technical, and marketing aspects of computerized online information services in relation to other library services.

Thus, some of the objectives of the study were the following:

(1) Determine how useful an online retrieval service is in meeting the needs of the general public.

(2) Develop a user profile that will assist library administrators in identifying the principal users of the system, the ability of patrons to pay for system use, and the type of information patrons require.

(3) Examine the effect of the online service on the library reference service and isolate causes for acceptance or rejection of the service.

(4) Determine the actual costs of providing such a service and outline the factors contributing to these costs.

(5) Identify the specific characteristics of different libraries which would have an effect on the operation.

In September 1976, the National Science Foundation extended the time period one additional year so that we could obtain evaluation data on the impact of charging patrons for the full cost of search, as well as to develop a more complete conceptual framework for the study.

It must be kept in mind that the experiment involved public libraries operating under different administrative policies and not under strict experimental control. Thus, when we try to communicate the results of the study, we are like the blind men in the fable, each touching a different part of the elephant, and trying to communicate the nature of the creature to others.

1.2 DESIGN OF THE STUDY

The study was originally designed as a 2-year study in which the first year of online service was to be provided at no cost to the libraries, and the second year was to be at one-half the usual charge for search time. The four CIN-member public libraries were to determine how the funds for the second-year operation were to be raised. Because of severe budget cuts experienced by these libraries, they all chose to pass the online search service costs on to the patron, while they paid for library personnel and communication costs. (The terminal rental, about $125 per month, was paid by the grant.) During the third year of the study, the full cost of online search service was also passed on to the patron.

The libraries each determined how the online service was to be integrated into their system. Since each of the libraries was in a different county/city jurisdiction, and was organized somewhat differently from the others, different approaches were taken to serving the public. There was, therefore, variation found in the evaluation data from library to library, and this variation is discussed in Volume II of the Two-Year Interim Report (Ref. 2).

1.2.1 Project Coordination

In the early stages of the project, monthly review meetings were held to iron out difficulties and to review the ACR evaluation requirements, but by the second year very few meetings were required. The libraries also submitted monthly reports to Lockheed, indicating problems, experience with the system, and suggestions, and these reports were then circulated to all the participating libraries.

1.2.2 Publicity

Public libraries have always had the problem of publicizing their service to attract the attention of potential patrons. With the inception of online retrieval service, and particularly with fee-based search, this becomes an even greater problem.

Early in the project it was realized that a publicity expert was required to coordinate and develop publicity for the online service, and the CIN Online Committee recommended Mrs. Evelyn Helmer, Public Information, San Mateo County Library. Her four-stage publicity plan is given in Appendix D. The libraries chose to use minimal publicity during the second and third years because they felt that they could not devote staff to a large demand.

1.2.3 Librarian Training

Librarians from each of the participating libraries were given the standard Lockheed 2-day training course, and they spent about 1 month familiarizing themselves with the system before dealing with patron searches. As time went by, skilled searchers left and others were trained to take their place, usually by sending them to the Lockheed training program. In addition, librarians attended special data base presentations, such as those given by Predicasts or by Biosciences Information Service (BIOSIS) in nearby cities.

Searchers received the DIALOG Chronolog, a monthly publication describing the latest features of the system, offering hints on system use, and indicating characteristics of the latest data bases available. They also received "DIALIB Notes," an informal series of notes that discussed their common mistakes in searching, new data bases, and interesting search techniques. During the second year, searches were reviewed and the results of this review were discussed in these DIALIB notes.

It must be kept in mind that DIALOG was in a period of rapid expansion during this 2-year period, during which time the number of data bases increased from about 18 to over 35. In the third year, the number of data bases increased to over 60. Thus, in some of the remarks of the remarks of the participating librarians given in Appendix B, one will find statements about the lack of time they had to keep up with this rapid growth.

1.3 ROLE OF THE STUDY PARTICIPANTS

The following organizations participated in the study. Their specific responsibilities with regard to the study are indicated.

- Joint Board of the Cooperative Information Network (CIN). CIN is an organization consisting of representatives of public and private libraries in San Mateo and Santa Clara Counties, in California, which has been in existence for nearly 5 years. Its purpose is to deal with mutual problems, share information resources, and coordinate joint activities of the member libraries. The role of the Joint Board of CIN in the present study was to review overall progress of the study, and make policy decisions, as required.
- CIN Online Retrieval Committee. This committee was appointed by the CIN Board to act as liaison with Lockheed Information Systems. The Online Committee consisted of Mrs. Patricia Bergsing, Burlingame Public Library, and Mr. Donald Fuller, Santa Clara (City) Public Library.
- Lockheed Information Systems. Under Dr. Roger K. Summit, Project Director, and Mr. Oscar Firschein, Principal Investigator, Lockheed provided the overall management, technical guidance, and coordination. In addition, Lockheed was responsible for providing the DIALOG online retrieval service, and training of library personnel. Lockheed prepared periodic reports for the National Science Foundation, conducted review meetings, and reviewed searches performed by the libraries.

- Applied Communication Research. Project evaluation was initially the responsibility of Dr. Alice Ahlgren of Applied Communication Research, Inc., a Palo Alto nonprofit behavioral research firm. She was responsible for preparation of the evaluation tools, coordination with the libraries concerning their use, and analysis and reporting on the results. During the third year, Ms. Carol Van Jepmond assumed these duties under the supervision of Dr. Colin Mick.
- Oversight Committee. To review the progress of the experiment, an Oversight Committee consisting of impartial experts in the field of experimental design, public library administration, and user studies was formed. The committee consisted of Professor A. Rubenstein (Northwestern University), Mrs. Virginia Ross Geller (Geller and Ross), Professor Charles Bourne (University of California, Berkeley), Mr. Forrest Carhart (METRO), and Mr. Douglas Ferguson (Stanford Libraries). Comments of several members of the Committee are given in Appendix G.
- CIN Libraries.* In June 1974, the CIN Board selected four libraries for the experiment, with each library representing a somewhat different type of library service: a large city (San Jose Public Library); a county library in a suburban area (Santa Clara County Library at Cupertino); a county library headquarters with very little walk-in traffic (San Mateo County Library, Belmont); and a smaller city library with much walk-in business (Redwood City Public Library). The libraries provided the services of the reference librarians, paid for communications costs, and provided space for the terminals. In addition, the librarians gave talks and presentations to various civic and governmental organizations to publicize the service. Figures 1-2 and 1-3 show the terminal locations in the four CIN libraries. All but the San Mateo County installation are in patron areas.
- Non-CIN Libraries.* After the first year, the NSF suggested that the experiment be expanded to include those libraries able to deal with nonsubsidized search. The intent was to obtain experience in passing the full cost of the search on to the public library. New libraries would be given free demonstration time and a free terminal for a 6-month period, but would be billed at full cost of a DIALOG search. The

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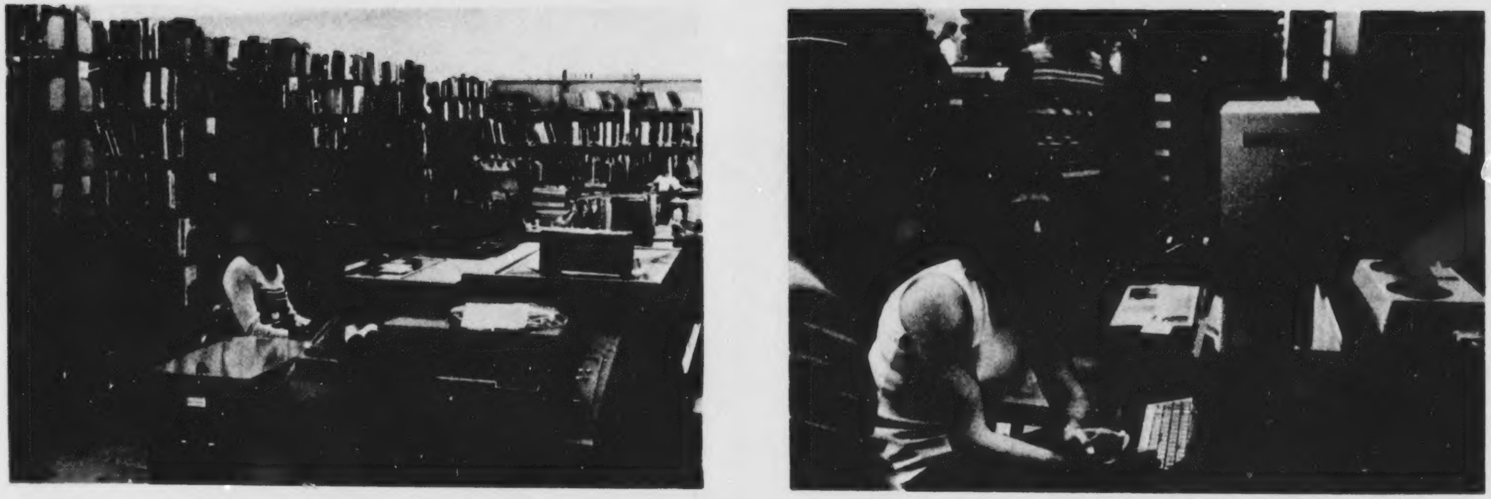
*Descriptions of the libraries are given in Appendix A, Library Profiles.



San Mateo County Library,
Belmont, California

Redwood City Public Library,
Redwood City, California

Fig. 1-2 Terminal Locations for Participating Cooperative Information Network (CIN) Libraries

Santa Clara County Library,
Cupertino, California

San Jose Public Library,
San Jose, California

Fig. 1-2 Terminal Locations for Participating Cooperative Information Network (CIN) Libraries (Cont.)

libraries could then pass this cost on to the patron, if there was no internal budget to support this service. This would provide data on the acceptance of a full-charge system by the public. Four public libraries agreed to participate in the project: Minneapolis Public Library (INFORM); Cleveland Public Library (FACTS FOR A FEE); Houston Public Library; and the Long Island Library Resources Council. A complete description of these libraries and their participation was given in Appendix A of Annex 1, Two Year Interim Report, Ref. 2. In addition, the Tulsa City-County Library (INFO II) was provided with training and demonstration time during the third year. The comments of the non-CIN librarians are given in Appendix B of the present report.

1.4 PROJECT CHRONOLOGY

The highlight events of the project are given below. Details were given in the Quarterly Reports indicated. A list of project meetings and papers presented is given in Appendix I.

June – August 1974 (First Quarterly Report)

- Participating libraries selected by CIN Board.
- Legal agreements prepared and signed between the libraries and Lockheed.
- Oversight Committee selected, and had first meeting at Lockheed Palo Alto Research Laboratory.
- Opening ceremonies at the San Jose Public Library, with attendant publicity.
- Meeting with heads of participating libraries regarding pricing policy for second year.
- Installation of terminals, training of library personnel, and initial operation.

September – November 1974 (Second Quarterly Report)

- User evaluation begun by ACR with distribution of questionaires and forms.
- Problems arise because high patron use of the system overloaded the reference staff.
- Publicity plan, Stage 1 (distribution of bookmarks, posters, and brochures), and Stage 2 (promotional mailings to local business) carried out. Many newspaper stories appear in local press.

December 1974 – March 1975 (Third Quarterly Report)

- Intensive preparation for the fee portion of the study. Participating libraries decide that restricted budget makes it impossible to budget any library funds for project, and that all such costs will be passed on to the patron. Members of Oversight Committee express disappointment that not even token funds are forthcoming from libraries.
- Because of the high level of search activity, participating libraries request financial support for search personnel. NSF approves a $10 per terminal hour subsidy for this purpose (demonstration time is not included).
- "Standard search" proposed by Lockheed because of concern expressed by librarians concerning cost of search to patron.
- Crisis at San Jose Public Library because of an overload condition created by San Jose State University students. A request was made from the library to the City Council that it be allowed to withdraw from the project; request is denied because of use to community. San Jose Library School provides a graduate student to deal with overload, and situation is resolved.
- Legal form for fee period is developed by libraries.
- Oversight Committee meets and discusses the San Jose situation, the need for development of a pricing policy, and the need for more interpretation in the evaluation data.
- Publicity efforts are cut back because of high system use.

June 1975 – August 1975 (Fourth Quarterly Report)

- Initiation of fee for service. No fee collection difficulties are experienced.
- Number of searches drops to 10% of previous free service searches.
- ACR completes analysis of first year of free operation.
- Cooper-DeWath time study to determine distribution of offline and online time is carried out for ACR.
- An additional day of training is provided to librarians.
- Project is expanded to four non-CIN libraries in other parts of the country using nonsubsidized search.

September 1975 – December 1975 (Fifth Quarterly Report)

- Oversight Committee meets and recommends that two terminals be subsidized for a third year of full-cost search operation, as requested by CIN libraries. However, the Committee expresses concern that continued external funding will delay a full assessment of nonsubsidized online search in the public library.
- Search activity increases from 115 last quarter to 187 searches this quarter (September, October, November).
- Newspaper advertisements produce little public response.
- An intensive mailing is sent to a community having a large number of professionals.

January – March 1976 (Sixth Quarterly Report)

- The number of searches shows a sharp increase for this quarter, from a total of 187 in the previous quarter to 254.
- Dr. Ahlgren of ACR visits the non-CIN libraries and reported on their characteristics.
- The search volume for the unsubsidized libraries proved to be extremely low.
- The response to the CIN mailing to a community with a large number of professionals proves to be quite low.
- A detailed review of searches is made by Lockheed during this quarter to determine common search errors.

June 1976

- Oversight Committee meets to review draft of Two-Year Report; recommends that third year of the study be devoted to providing a conceptual framework and to the evaluation of full-cost of online search to patron.
- Redwood City Public Library decides to discontinue participation due to budget limitations. (See statement of Lisa Naef, Appendix B.)

September 1976

- National Science Foundation approves a time extension for a third year of the study in accordance with the Oversight Committee recommendations.
- Two-Year Interim Report is issued.
- After several months of participation in the third year, the Santa Clara County Library (Cupertino) decides to discontinue participation (see reasons given in the statement of Barbara Campbell, Santa Clara County Librarian, Appendix B).
- Tulsa City-County Library is given demonstration time and training.

June 1977

- At the conclusion of the DIALIB study, San Jose and San Mateo County libraries decide to retain online search using a fee-for-service approach. The Minneapolis (INFORM), Cleveland (Facts for a Fee), and Tulsa City-County (INFO II) public libraries also continued their fee-based approach to online service.

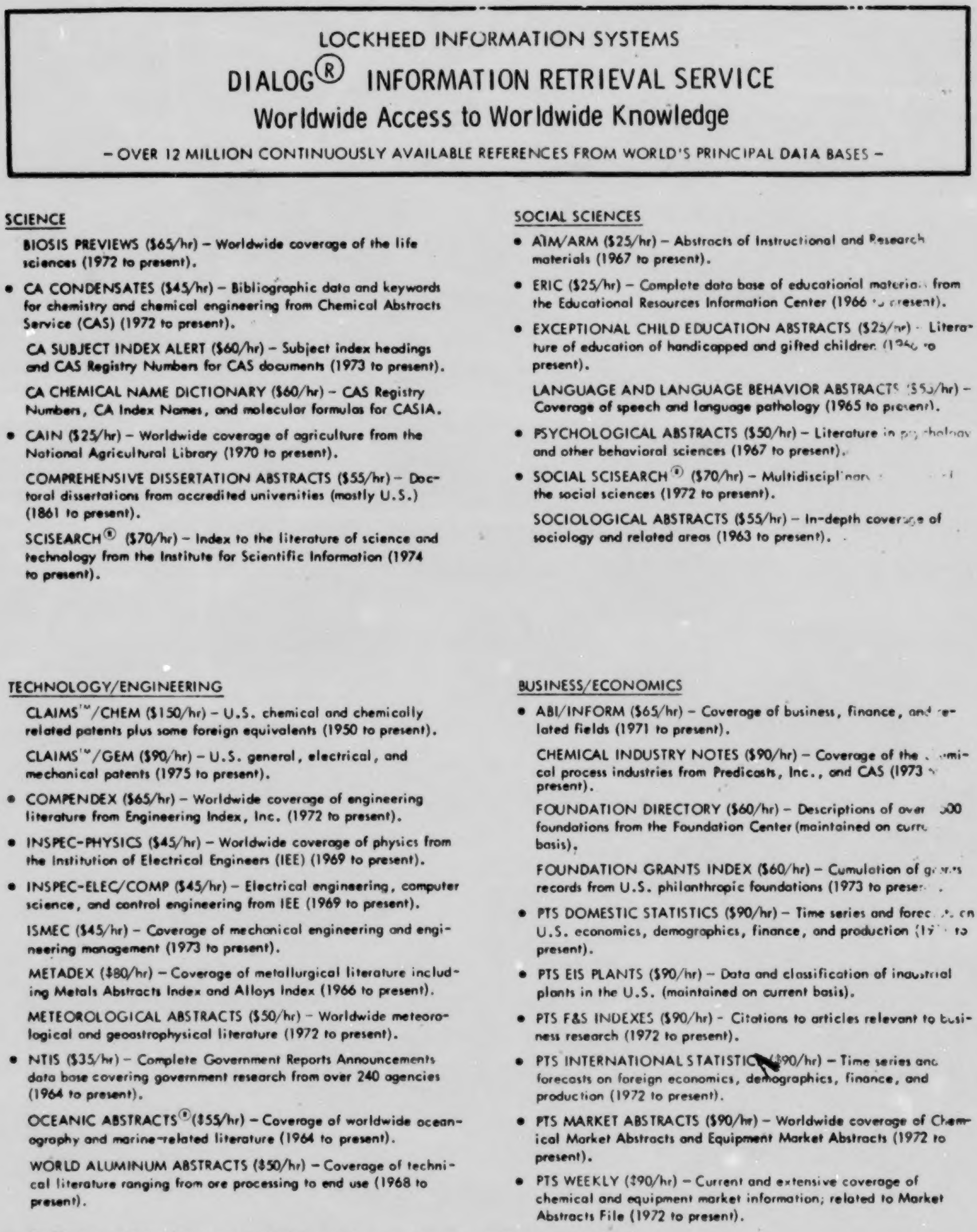
Section 2
ONLINE REFERENCE RETRIEVAL

This section provides some background on online reference retrieval. The fee structure used in the DIALIB study, and the effect of fees on search volume are also indicated.

2.1 DIALOG® RETRIEVAL SYSTEM

The Lockheed DIALOG Information Retrieval Service was used in the study. Approximately 18 data bases were available at the start of the Project. By the end of second year, over 36 data bases in science and technology, business social science, and psychology were available, as shown in Fig. 2-1. (Note that the cost of each data base is also indicated.) By the end of the third year, over 60 data bases were available. An annotated search, indicating the sequence of operations used, is given in Fig. 2-2, and the DIALOG system is described in Appendix F. Although the DIALOG service was used, the results of the study should be applicable for public libraries using an online search service that is accessible via telephone lines using standard terminals, and offering a variety of data bases of general public interest.

To perform a search, the user dials the telephone number of the search service and obtains a high-pitched tone indicating that the computer is available. The telephone handset is then inserted into the acoustic coupler which is part of the terminal. A message requesting the user password is printed out on the terminal. After the password is accepted, the user specifies the desired data base and then enters search terms via the keyboard. Search terms can be natural language (English) or numerical codes (such as product, event, or concept class codes) for some of the data bases. The user is aided in selection of search terms by being able to have terms displayed that are alphabetically close to an entered term. (For some data bases, terms that



LOCKHEED INFORMATION SYSTEMS

DIALOG® INFORMATION RETRIEVAL SERVICE

Worldwide Access to Worldwide Knowledge

– OVER 12 MILLION CONTINUOUSLY AVAILABLE REFERENCES FROM WORLD'S PRINCIPAL DATA BASES –

SCIENCE

BIOSIS PREVIEWS ($65/hr) – Worldwide coverage of the life sciences (1972 to present).

- CA CONDENSATES ($45/hr) – Bibliographic data and keywords for chemistry and chemical engineering from Chemical Abstracts Service (CAS) (1972 to present).

CA SUBJECT INDEX ALERT ($60/hr) – Subject index headings and CAS Registry Numbers for CAS documents (1973 to present).

CA CHEMICAL NAME DICTIONARY ($60/hr) – CAS Registry Numbers, CA Index Names, and molecular formulas for CASIA.

- CAIN ($25/hr) – Worldwide coverage of agriculture from the National Agricultural Library (1970 to present).

COMPREHENSIVE DISSERTATION ABSTRACTS ($55/hr) – Doctoral dissertations from accredited universities (mostly U.S.) (1861 to present).

SCISEARCH® ($70/hr) – Index to the literature of science and technology from the Institute for Scientific Information (1974 to present).

TECHNOLOGY/ENGINEERING

CLAIMS™/CHEM ($150/hr) – U.S. chemical and chemically related patents plus some foreign equivalents (1950 to present).

CLAIMS™/GEM ($90/hr) – U.S. general, electrical, and mechanical patents (1975 to present).

- COMPENDEX ($65/hr) – Worldwide coverage of engineering literature from Engineering Index, Inc. (1972 to present).
- INSPEC-PHYSICS ($45/hr) – Worldwide coverage of physics from the Institution of Electrical Engineers (IEE) (1969 to present).
- INSPEC-ELEC/COMP ($45/hr) – Electrical engineering, computer science, and control engineering from IEE (1969 to present).

ISMEC ($45/hr) – Coverage of mechanical engineering and engineering management (1973 to present).

METADEX ($80/hr) – Coverage of metallurgical literature including Metals Abstracts Index and Alloys Index (1966 to present).

METEOROLOGICAL ABSTRACTS ($50/hr) – Worldwide meteorological and geoastrophysical literature (1972 to present).

- NTIS ($35/hr) – Complete Government Reports Announcements data base covering government research from over 240 agencies (1964 to present).

OCEANIC ABSTRACTS® ($55/hr) – Coverage of worldwide oceanography and marine-related literature (1964 to present).

WORLD ALUMINUM ABSTRACTS ($50/hr) – Coverage of technical literature ranging from ore processing to end use (1968 to present).

SOCIAL SCIENCES

- AIM/ARM ($25/hr) – Abstracts of Instructional and Research materials (1967 to present).
- ERIC ($25/hr) – Complete data base of educational materials from the Educational Resources Information Center (1966 to present).
- EXCEPTIONAL CHILD EDUCATION ABSTRACTS ($25/hr) – Literature of education of handicapped and gifted children (19[illegible] to present).

LANGUAGE AND LANGUAGE BEHAVIOR ABSTRACTS ($55/hr) – Coverage of speech and language pathology (1965 to present).

- PSYCHOLOGICAL ABSTRACTS ($50/hr) – Literature in psychology and other behavioral sciences (1967 to present).
- SOCIAL SCISEARCH® ($70/hr) – Multidisciplinary [illegible] the social sciences (1972 to present).

SOCIOLOGICAL ABSTRACTS ($55/hr) – In-depth coverage of sociology and related areas (1963 to present).

BUSINESS/ECONOMICS

- ABI/INFORM ($65/hr) – Coverage of business, finance, and related fields (1971 to present).

CHEMICAL INDUSTRY NOTES ($90/hr) – Coverage of the chemical process industries from Predicasts, Inc., and CAS (1973 to present).

FOUNDATION DIRECTORY ($60/hr) – Descriptions of over [illegible]00 foundations from the Foundation Center (maintained on current basis).

FOUNDATION GRANTS INDEX ($60/hr) – Cumulation of grants records from U.S. philanthropic foundations (1973 to present).

- PTS DOMESTIC STATISTICS ($90/hr) – Time series and forecasts on U.S. economics, demographics, finance, and production (19[illegible] to present).
- PTS EIS PLANTS ($90/hr) – Data and classification of industrial plants in the U.S. (maintained on current basis).
- PTS F&S INDEXES ($90/hr) – Citations to articles relevant to business research (1972 to present).
- PTS INTERNATIONAL STATISTICS ($90/hr) – Time series and forecasts on foreign economics, demographics, finance, and production (1972 to present).
- PTS MARKET ABSTRACTS ($90/hr) – Worldwide coverage of Chemical Market Abstracts and Equipment Market Abstracts (1972 to present).
- PTS WEEKLY ($90/hr) – Current and extensive coverage of chemical and equipment market information; related to Market Abstracts File (1972 to present).

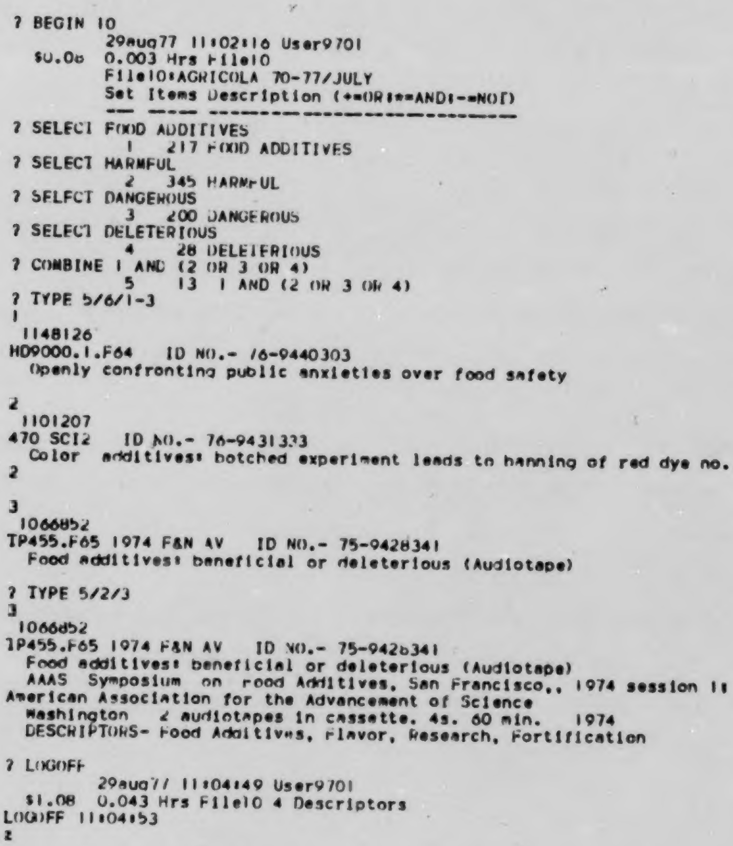
- **Indicates data bases available at inception of study, June 1974.**

Fig. 2-1 DIALOG Data Bases (by End of Second Year)

PERFORMING A DIALOG SEARCH

The patron is interested in references to <u>harmful food additives</u>, and the librarian therefore chooses the National Agricultural Library Data Base that has a Food and Nutrition file. The set of references pertinent to the term "food additives" is first selected. (There are 217 such citations.) Then sets pertinent to the terms "harmful," "dangerous," and "deleterious" are selected. (Sets 2, 3, and 4, respectively.) Finally the librarian combines the sets by ANDing Set 1 with the set formed by ORing Sets 2, 3, and 4. The resulting Set 5 has 13 citations, and to see which of the members of this set are relevant to the request, the librarian requests that titles of the first three citations be typed out. Because the third citation seems to be of most interest to the patron, the librarian requests the more complete citation for this title. Further information could have been obtained by requesting the abstract for that title.

When many citations are to be printed, the librarian will request that the citations be printed offline and be mailed to the library. Note that the entire cost of this terminal session was only $1.08.



```
? BEGIN 10
        29aug77 11:02:16 User9701
  $0.06  0.003 Hrs File10
        File10:AGRICOLA 70-77/JULY
        Set Items Description (+=OR;*=AND;-=NOT)
        --- ----- ---------------------------------
? SELECT FOOD ADDITIVES
           1   217 FOOD ADDITIVES
? SELECT HARMFUL
           2   345 HARMFUL
? SELECT DANGEROUS
           3   200 DANGEROUS
? SELECT DELETERIOUS
           4    28 DELETERIOUS
? COMBINE 1 AND (2 OR 3 OR 4)
           5    13  1 AND (2 OR 3 OR 4)
? TYPE 5/6/1-3
1
 1148126
HD9000.1.F64   ID NO.- 76-9440303
  Openly confronting public anxieties over food safety

2
 1101207
470 SCI2   ID NO.- 76-9431333
  Color  additives: botched experiment leads to banning of red dye no.
2

3
 1066852
TP455.F65 1974 F&N AV   ID NO.- 75-9428341
  Food additives: beneficial or deleterious (Audiotape)

? TYPE 5/2/3
3
 1066852
TP455.F65 1974 F&N AV   ID NO.- 75-9428341
  Food additives: beneficial or deleterious (Audiotape)
  AAAS  Symposium  on  Food Additives, San Francisco,, 1974 session 1:
American Association for the Advancement of Science
  Washington   2 audiotapes in cassette. 4s. 60 min.   1974
  DESCRIPTORS- Food Additives, Flavor, Research, Fortification

? LOGOFF
        29aug77 11:04:49 User9701
  $1.08  0.043 Hrs File10 4 Descriptors
LOGOFF 11:04:53
z
```

Fig. 2-2 Typical DIALOG Search

are conceptually close to an entered term can be displayed.) The system then indicates the number of document citations in the data base that contain the specified term(s), and supplies an identification number for this set of citations. Sets can then be combined using the AND, OR, NOT operators. Because of the command language used, and because knowledge of the data bases is required, a search intermediary who has been trained to use the system usually performs the actual search.

2.2 SEARCH FEES

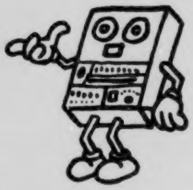
As indicated previously, the participating libraries chose to pass the cost of searching on to the patron during the second year pay period. We will not discuss the pros and cons of fee for service in the public library; the interested reader is referred to Ref. 3, and the comments of the librarians in Appendix B. For an analysis of the cost of online searching, see Section 3 of the Annex volume, and Ref. 4.

2.2.1 Fee Structure

There is no fixed monthly cost associated with subscribing to the DIALOG system. Instead, search cost is computed on the basis of "connect time," the actual clock time that the user is connected to the system. This connect time cost varies from data base to data base, as was indicated in Fig. 1-2.

Because they were concerned about the cost of search to the patron, the participating librarians requested that an alternative fee structure be provided for the experiment – a structure that did not depend on connect time. Therefore, two different fee structures were offered to the participants, a "custom search" that had no limitations, and which was based on one-half the usual connect time costs, and a special "standard search" at a flat fee of $5 per search that was limited to a single data base and to 20 offline prints. Figure 2-3 shows a flyer that explained these two types of search to the public.

DIALOG



COMPUTERIZED INFORMATION RETRIEVAL

DOES YOUR REFERENCE QUESTION REQUIRE MORE THAN A STANDARD, MANUAL LIBRARY SEARCH ?

Perhaps a computerized search will find what you are looking for in the field of education, agriculture, psychology, science, engineering, or business.

For your convenience, the following plans are available:

1. Standard Search

   A search will be conducted in one data base. There is a limit of ten sets and 20 printed citations. It is suggested that it be used to search a limited subject or to search a subject on a preliminary basis, prior to setting up a custom search

   Cost: $5.00

2. Custom Search

   This search can be as extensive as necessary to fully examine the material available on the subject.

   Cost: A $5.00 deposit is required for all custom searches, and the balance is payable on completion of the search, or at the time the off-line prints are picked up.

This system will compile a sizable bibliography for you if the subject is currently of great interest or if it has been heavily researched.

If your particular subject is rare or unexplored, the computer may seek in vain. Perhaps it will not call up a single citation.

Too much

JUST RIGHT

Not enough

Please remember, if we search and find nothing....there is still a charge. If you chose a custom search, it might be costly. So please, for your budget's sake, and our peace of mind, discuss your plans with the librarian before any search is initiated. Then perhaps, we'll all communicate happily forever after.

See sample on other side.

Brought to you by: Cooperative Information Network
Lockheed Information Systems and the National Science Foundation

Fig. 2-3 Flyer Explaining Fee Search to Patron

Contrary to our expectations, the standard search was used only a small fraction of the time.* Two possible factors that led to this light use were (1) the ability of performing a custom search in the low cost data bases such as ERIC at less than $5, and (2) the restriction to a single data base was found to be too confining.

2.2.2 Mechanics of Fee Collection

Fears were expressed that the libraries would encounter much difficulty in fee collection, both because of refusal of a patron to pay the balance of the fee due to dissatisfaction with the results, as well as by patrons who fail to pick up their results their results and to pay the balance due. For this reason, a contract-like form was prepared and used, as shown in Fig. 2-4. In addition, a procedure was established so that a disgruntled patron could obtain a refund if the search was forwarded to Lockheed for analysis, and it was found that the search had indeed been incorrectly performed. (The library would refund the money to the patron and Lockheed would credit the library's account for that amount.)

In actuality, there were no requests for refunds and no defaults by the patron. It surprised the librarians to have some of the patrons indicate that they thought that the search would cost even more. (See Appendix B for some librarian comments concerning fees and the collection.) None of the libraries used bank credit card operation, but several established accounts for several repeat users.

2.3 IMPACT OF FEE ON SEARCH VOLUME

The impact of fee for service on search volume is shown in Fig. 2-5. Note that the search volume rose during the free period from 55 searches in September 1974 to approximately 300 in May 1975, for the four CIN libraries. In June 1975, when fee

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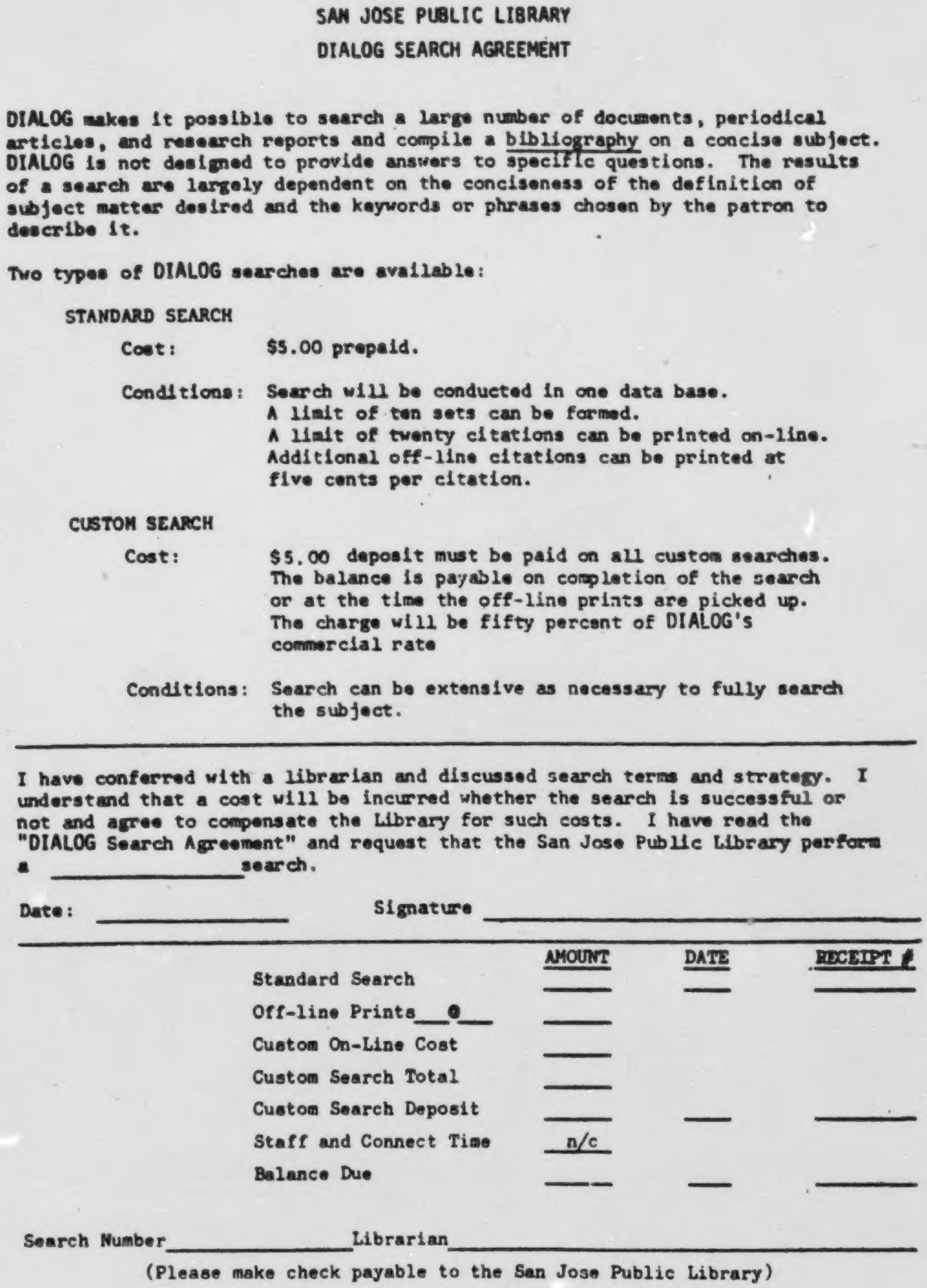
*Only 14% of the searches were standard searches.



SAN JOSE PUBLIC LIBRARY

DIALOG SEARCH AGREEMENT

DIALOG makes it possible to search a large number of documents, periodical articles, and research reports and compile a bibliography on a concise subject. DIALOG is not designed to provide answers to specific questions. The results of a search are largely dependent on the conciseness of the definition of subject matter desired and the keywords or phrases chosen by the patron to describe it.

Two types of DIALOG searches are available:

STANDARD SEARCH

Cost:	$5.00 prepaid.
Conditions:	Search will be conducted in one data base. A limit of ten sets can be formed. A limit of twenty citations can be printed on-line. Additional off-line citations can be printed at five cents per citation.

CUSTOM SEARCH

Cost:	$5.00 deposit must be paid on all custom searches. The balance is payable on completion of the search or at the time the off-line prints are picked up. The charge will be fifty percent of DIALOG's commercial rate
Conditions:	Search can be extensive as necessary to fully search the subject.

I have conferred with a librarian and discussed search terms and strategy. I understand that a cost will be incurred whether the search is successful or not and agree to compensate the Library for such costs. I have read the "DIALOG Search Agreement" and request that the San Jose Public Library perform a ________________search.

Date: ________________ Signature ________________________________

	AMOUNT	DATE	RECEIPT #
Standard Search	____	____	____
Off-line Prints___@___	____		
Custom On-Line Cost	____		
Custom Search Total	____		
Custom Search Deposit	____	____	____
Staff and Connect Time	n/c		
Balance Due	____	____	____

Search Number______________Librarian______________________________

(Please make check payable to the San Jose Public Library)

Fig. 2-4 Typical Fee for Search Agreement

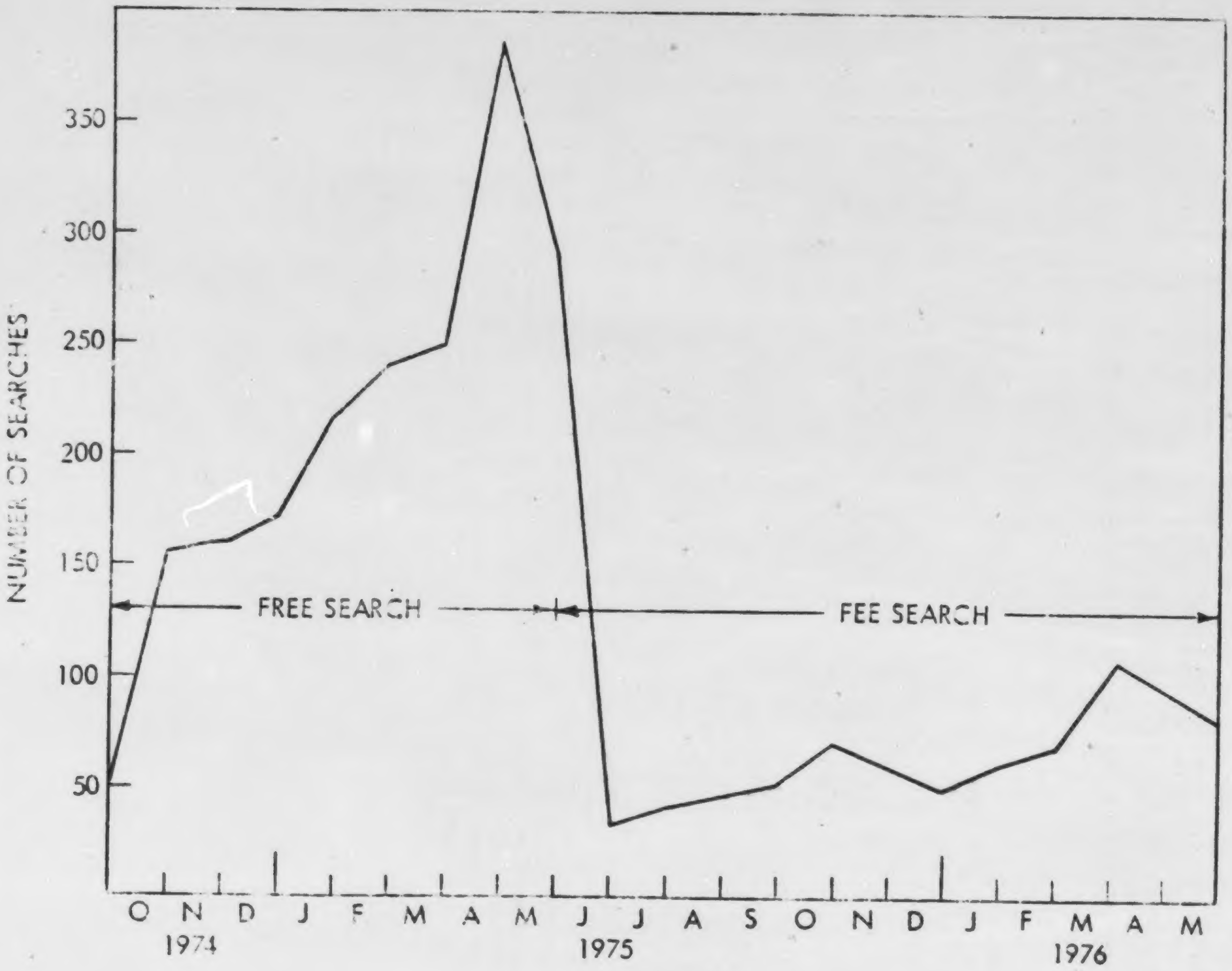


Fig. 2-5 Total Monthly Searches Performed by CIN Libraries

for service was initiated, the search volume dropped precipitously to 29 searches, but rose during the year until 77 searches were performed in May 1976. It should be noted that there was considerable variation among the libraries. As indicated in Section 3, San Jose displayed a fairly stable search volume across all 3 years, while San Mateo experienced a significant drop in search volume with the imposition of search charges. The online search activity for the entire 3-year period for San Jose and San Mateo County is given in Fig. 2-6. Note the variation in demand from month to month, a situation that leads to staffing problems.

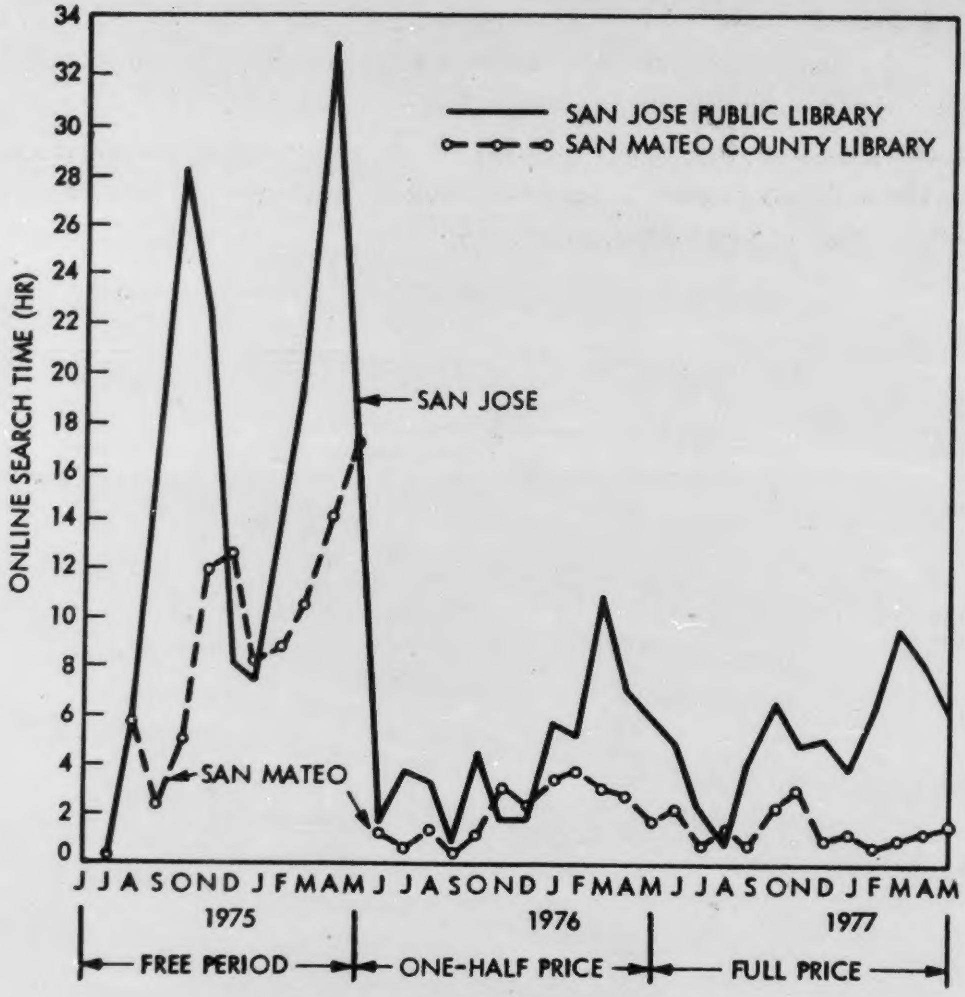


Fig. 2-6 Online Search Time for San Jose Public and San Mateo County Libraries

Section 3
EVALUATION SUMMARY

One of the principal purposes of the evaluation conducted by Applied Communication Research was to provide public library administrators with data which would allow them to make decisions about the utility of providing an online search service through the public library and to determine what the cost of such a service would be. To accomplish this purpose, case studies were completed for each of the four CIN libraries for the first 2 years. These studies were continued into the third year for the two remaining CIN libraries. (The non-CIN libraries participated for 6-month periods to supply subjective evaluations; these libraries are discussed in the Evaluation Annex of the Two-Year Interim Report, Ref. 2, and comments from these libraries appear in Appendix B of the present report.)

Data for the case studies were collected through four major instruments: computer command summary sheets; search request forms completed by both the patron at the time of the search request and by the librarian upon completion of the search; follow-up questionnaires completed by patrons after receipt of the results of the search; and interviews with working librarians, head reference librarians, and library administrators.

The evaluation was aimed along three major dimensions: descriptive analysis of actual searches; analysis of usage patterns and user characteristics; and analysis of library impact. Search statistics included information on search costs, staff time devoted to online searching, location of source documents, and time to complete the search. Usage patterns and user characteristics included information on user occupations, reasons for search, level of education, type of question, value of search to patron, number of useful citations, and source through which patron heard about the availability of the online service. Library impact analysis included an assessment of the impact of an online service on the reference service, the reference librarian, library policy, and the community served by the library. Changes which occurred within each evaluation dimension between the free and pay periods were also identified and discussed.

The following evaluation material only highlights some of the data collected during the course of the evaluation. For more complete information, the reader is referred to the Evaluation Annex volume, and for a very complete discussion of the methodology of reference service evaluation, Ref. 5 should be consulted.

3.1 CHANGES IN THE ENVIRONMENT

It is important to point out that the DIALIB experiment was carried out in a changing environment influenced by societal conditions, changes in online search services, and changes in awareness of the profession concerning online search.

- Societal conditions. The 3 years were a time of inflation during which local government was under great pressure to keep the cost of government under control. Public libraries had their budgets either cut or maintained at a constant level, and the rising cost of books and serials, coupled with rising labor costs, made life difficult for library administrators. This economic factor is one reason for the enormous growth of library networks.
- Changes in online search services. There has been a large growth in the number of data bases offered by the search services in the past 3 years. This growth resulted in a greater subject breadth in online retrieval, and has seen a move to more humanities and social sciences offerings. There have been cost reductions brought about by decreased communications costs, as well as competition between services. The system reliability for both communications and search service has improved, and training courses and materials offered by both the search services and the data base purveyors have also improved considerably during this time.

- Awareness of the profession. When the project began, there was little in the way of books, journals, and papers concerning online search. This has now changed, and there are now two journals devoted to online search. In addition, the Special Libraries Association and the American Library Association offered seminars and discussion sessions on the technical aspects of online search, as well as on the philosophical questions (such as fee for service) that often arise in connection with online search.

Within public libraries, there was increased use of networking and increasing automation of routine library functions. There was increased staff awareness of online searching. There was also increased demand for developing new means for meeting the information needs of the public.

In short, the environment within which the DIALIB project took place was far from static.

3.2 RESULTS OF THE STUDY

When the experiment is viewed across all 3 years, a number of trends appear:

- The personalities and commitment of individual librarians continued to be a key factor in the success of online search in the public library.
- Staff time continued to be perceived as the major problem by the participating libraries throughout the study.
- Searchers tended to use only a narrow subset of the available data bases to answer client questions.
- Search costs did not appear to be a problem to the patrons. Although there was a significant drop in the number of searches conducted when the initial charge period begain (in Year 2), the movement from half- to full-pay mode (at the beginning of Year 3) did not significantly impact the search volume.
- There were significant shifts in the kinds of people who used the service across the 3 years of the experiment.

- The value of a search to the patron remained high in going from free, to one-half fee, to full fee.
- The patron was present more often in the second and third years (50% of the searches), compared to the first year (15%).
- As the libraries became more experienced in online searching, their time performance appeared to become more uniform.

These trends are discussed in more detail below.

3.2.1 Importance of Individual Librarians

The major trend across the 3 years of the project is the impact of individual personalities upon the success of the search service in public libraries. During the course of the project, we observed the impact of personalities at all participating libraries and at some non-CIN libraries as well. Although it is difficult to support with data, we feel the personalities and commitment of individual librarians are the key factor to the success of online searching in the public library. In essence, what is needed is an entrepreneur — somebody within the library staff who becomes a strong advocate of the service and is willing to promote it both within the library and to the user community.

Three specific roles determine the success of online searching in public libraries: the searcher, the head reference librarian, and the library director.

The searcher is responsible for the actual interface between the client and the search service. Two basic types of skills are required — query negotiation and online searching. Query negotiation is common to all reference work and online search skills are, to a certain extent, extensions of traditional library search skills. Some people are much more adept at online searching than are others, but in general it is a skill which can be learned. We feel the skills and personality required for the searcher can be found in most reference departments; all that is required is training in the use of the online search service and in the use of specific data bases.

Although the qualities required for online searching are not particularly difficult to fill, the qualities required of the head reference librarian and the library director are rare and difficult to find. These roles require a strong personal commitment to the service and a sense of entrepreneurship. Without the strong support and commitment of both the head reference librarian and the library director, the potential for the success of online searching in the public library is at best marginal.

3.2.2 Staff Time

All four CIN libraries perceived staff time as their major problem. Particularly during the free period, all the libraries found themselves hard-pressed to handle the demand for staff time generated by requests for online search. In the transition from free to pay service, the librarians decreased their average online search time from 23 minutes to 16 minutes. (This was partly due to increased familiarity with the DIALOG system, but a major factor was also the desire to keep the cost of the search to the patron as low as possible.) However, this time saving was offset by increased offline search preparation time which increased sharply between Years 1 and 2, and dropped slightly in the third year.

The distribution of average offline preparation time for the 3 years of DIALIB is shown in Fig. 3-1. The most dramatic change is in the searches not requiring preparation time: almost 50% of the searches used no offline preparation time in the first year, while less than 20% of the searches required no preparation time in the third year. On the other hand, while about 20% of the searches required 15 to 25 minutes of offline preparation time in the first year, more than 40% of the searches required 15 to 25 minutes of preparation time in the third year of full-fee service.

An interesting comparison of the average staff time for a search for the four CIN libraries is shown in Fig. 3-2. These data were obtained in the first and second years of DIALIB. Note how the imposition of fee for service had little effect on the San Jose and Santa Clara County libraries, but caused an increase of about 1/3 in going from

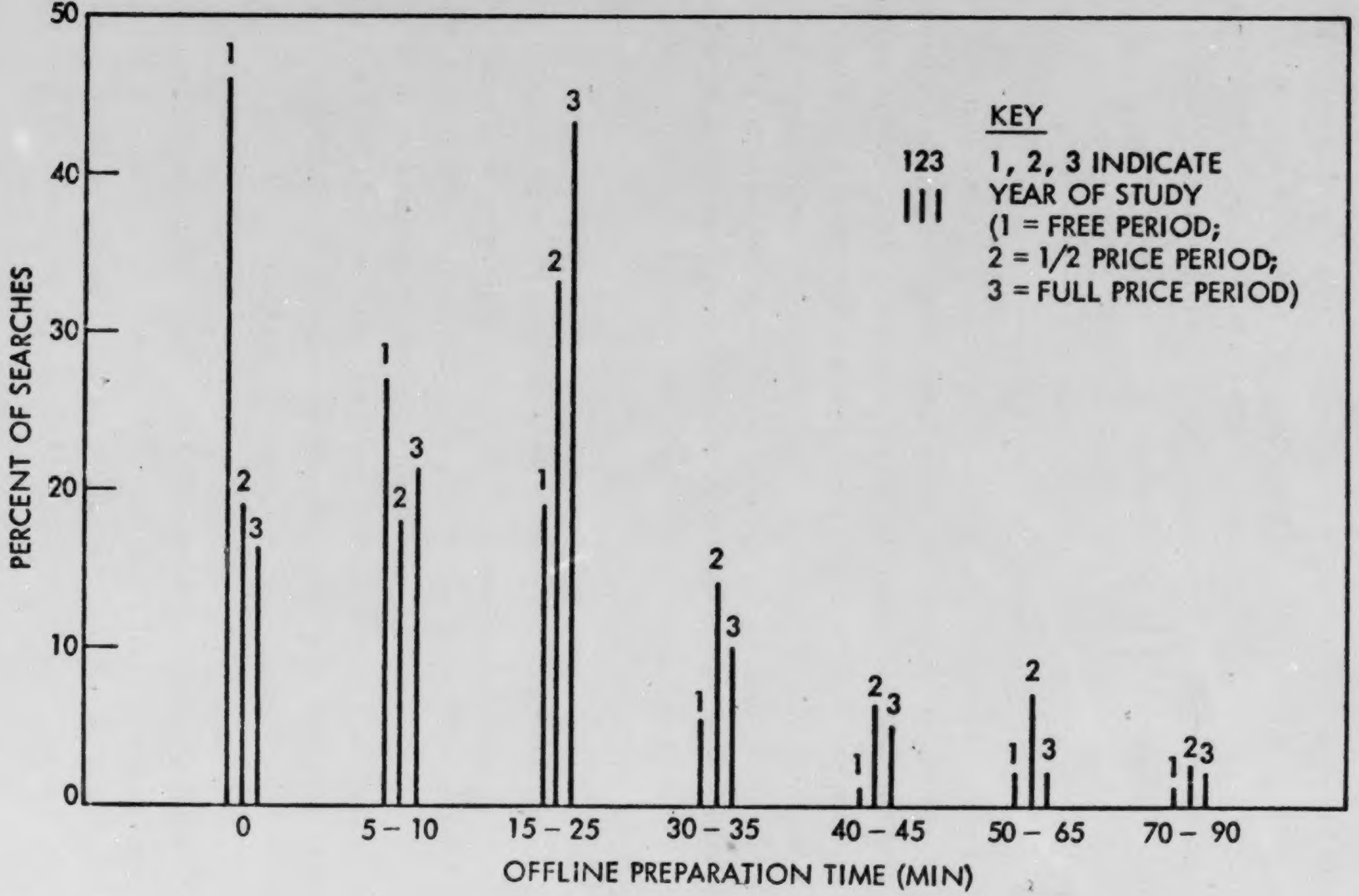


Fig. 3-1 Average Off-Line Search Preparation Time (% of Searches Versus Time)

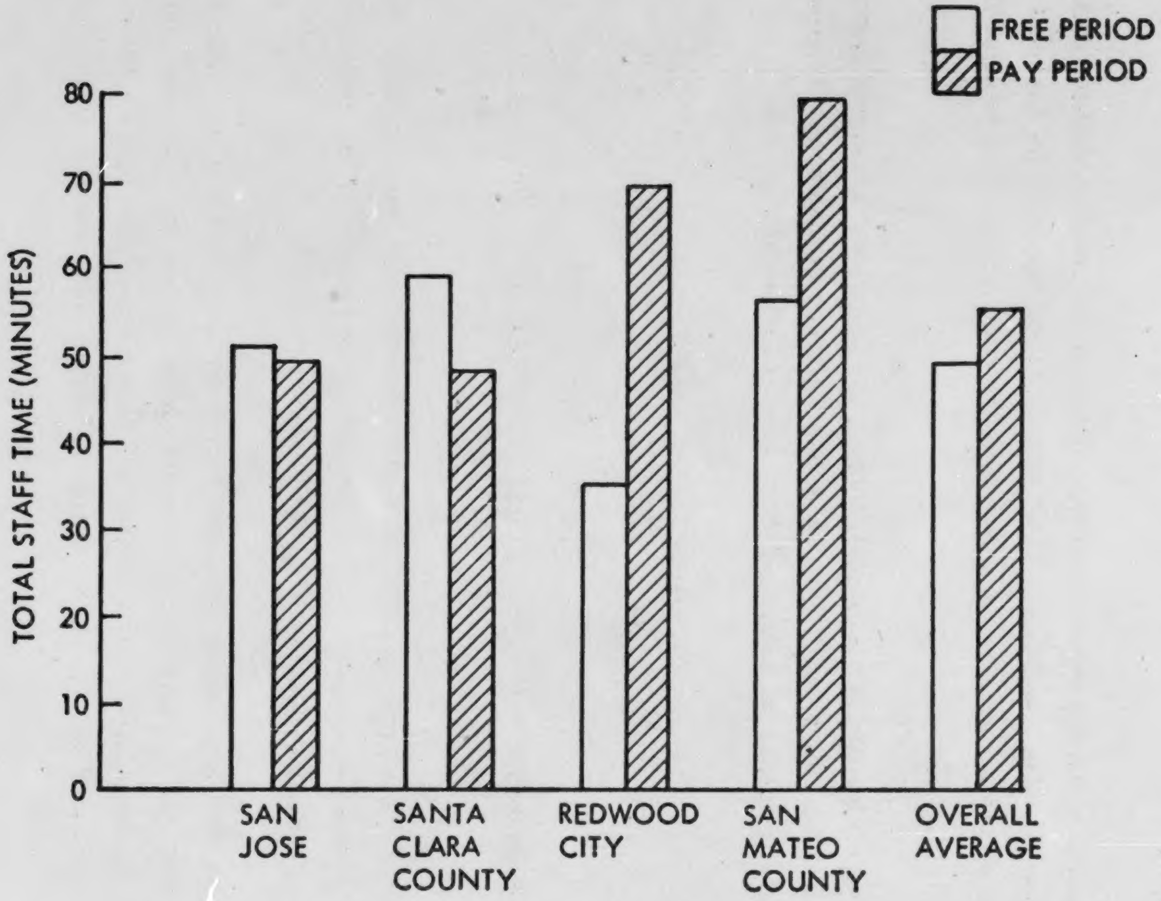


Fig. 3-2 Average Staff Time Required for a Search (Including Pre- and Post-Search, Online Time, and Patron Follow-Up)

free to fee service at the San Mateo County Library, and a doubling of preparation time for Redwood City.

3.2.3 Data Base Use

During the course of the interviews, most librarians noted that they had little demand for most of the available data bases. Their comments indicate that, for the most part, data base use accurately reflects the interests of the clients, and is not influenced by data base cost.

Looking across all 3 years of the project, there was a significant movement toward the use of only a few data bases. The use of both ERIC and Psychological Abstracts increased steadily across all 3 years of the project, as shown in Fig. 3-3.

	Year 1		Year 2		Year 3	
	No.	%	No.	%	No.	%
ERIC	344	(15.5)	232	(24.7)	146	(31.6)
Psychological Abstract	357	(16.0)	180	(19.2)	95	(20.6)
		31.5		43.9		52.2

In the third year of the project, these two data bases were used for more than 50% of the searching. Data bases which showed decreasing use included NTIS, Social Science Citations, Engineering Index, INSPEC, and Chemical Abstracts.

Interviews with the librarians revealed that they were aware that they were using only a few of the available data bases. All librarians indicated that they felt most comfortable with the frequently used data bases and they acknowledged that significantly more preparation time was needed to search the infrequently used data bases.

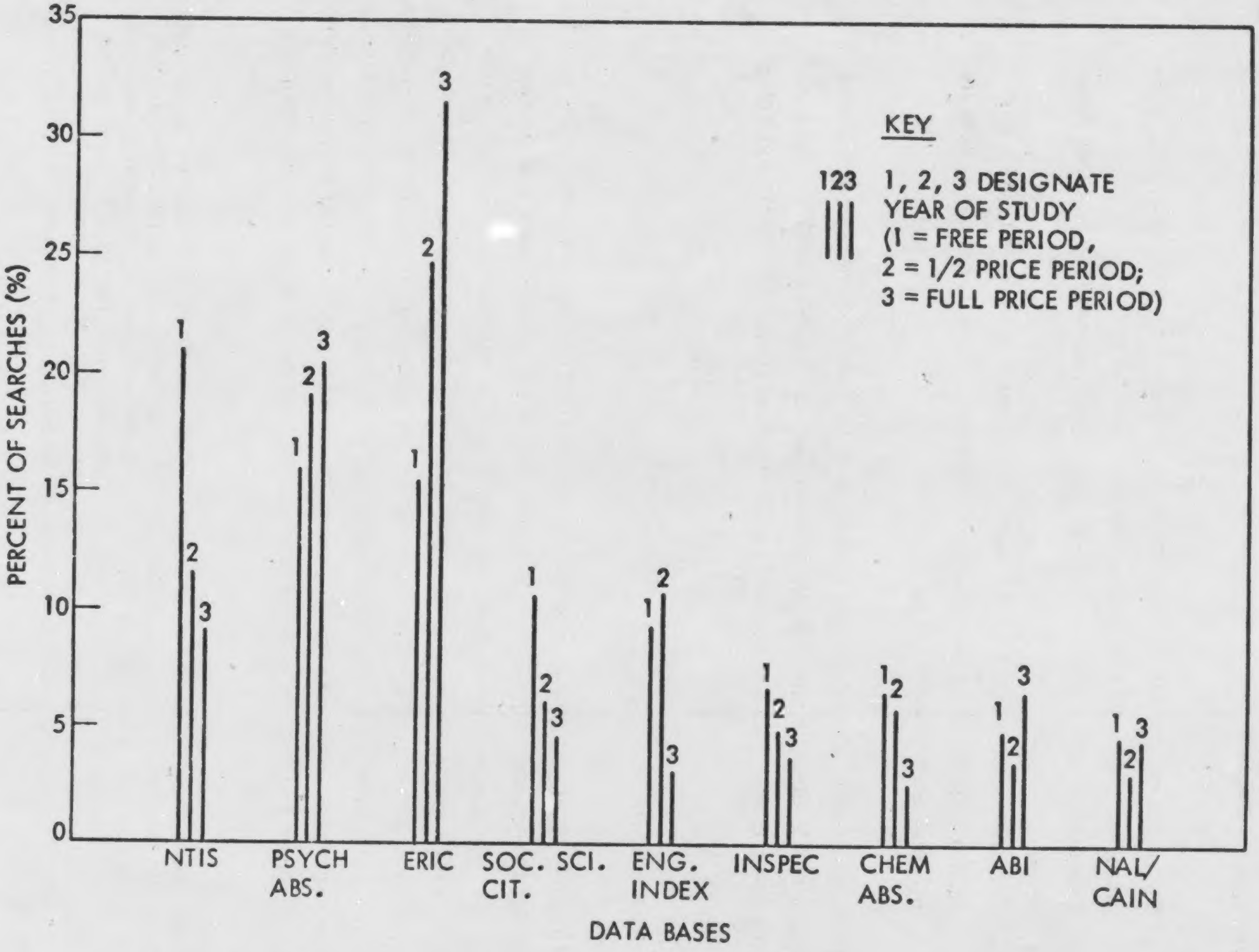


Fig. 3-3 Data Base Use for All Three Years (% of Searches Versus Data Bases)

There are several possible causes for this increasing reliance on only a few data bases:

(1) These are the data bases the librarians felt most comfortable with, and therefore tended to use to answer most questions.

(2) The search topics dealt with areas that were covered only by these data bases.

(3) The search topics reflect the fact that the service attracted only a particular type of client whose search requests dealt with the areas covered by these data bases.

It should be noted that, although this reliance on only a few data bases parallel the results obtained in the ACR study of METRO-Columbia Teachers College, it is quite different from the experience reported to ACR by Minneapolis (INFORM) and Tulsa (INFO II).

3.2.4 Search Costs

It is difficult to compare search costs to the patron from the second to the third year since during the second year patrons paid only 50% of the search costs and also had the option of obtaining a "standard search" for $5. (The standard search was of one data base, with a maximum of 20 citations.) However, by ignoring standard searches and doubling the patron cost for the second year, we were able to make this comparison.* We found that the user search costs dropped slightly during the third year. Below are listed the various search cost levels, percent of searches performed at each level during Year 2, projected Year 2 search distributions, and actual third year distributions.

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*Projected costs were obtained by assuming that the distribution of actual search costs would remain the same, although in the third year patrons would be charged the full cost of the searches. Thus, given that 25.9% of all searches in the second year cost 0 to $4.99, the actual cost of these searches ranged from 0 to $10. We assumed an even distribution so 13% of the searches should cost $0 to $4.99 and 13% should cost $5 to $9.99. The precision of the cost reporting prevented projections beyond the $19.99 level.

Percent of Searches

Cost Level	Year 2 (At 1/2 Fee)	Year 2 (Projected for Full Fee)	Year 3
0-4.99	25.9	13	10.1
5-9.99	35.4	13	25.2
10-14.99	10.5	17.7	21.5
15-19.99	8.2	17.7	12.9

The distribution of costs to the patron in the third year is shown in Fig. 3-4. Note that 61% of the patrons spent less than $15 for their search.

It is also interesting to note that the imposition of full search charges did not result in any decrease in the number of searches performed. Both libraries showed an increase in search volume over the previous year. San Jose displayed a fairly stable search volume across all 3 years, while San Mateo experienced a significant drop in search volume with the imposition of search charges. (Remember that little or no publicity was provided during the second and third years.)

Number of Searches

Year	San Jose	San Mateo
1	252	198
2	226	44
3	242	62

3.2.5 Changes in Client Groups

The principal users of the system were graduate students, educators, technical professionals, and librarians. [Previous analyses of public library users, (Ref. 6) give similar results.] Most online searches were requested as either part of the patron's job or for research papers.

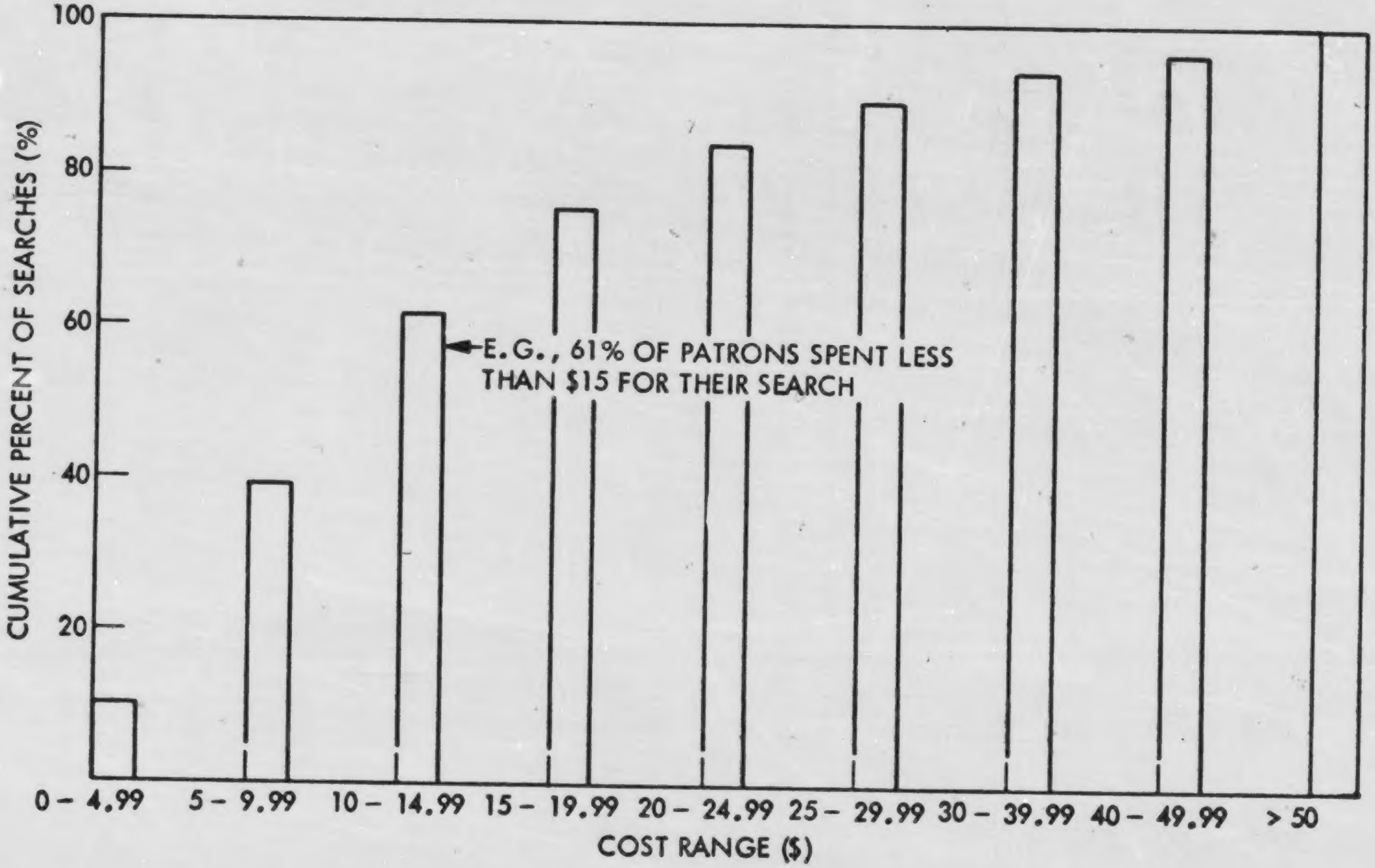

Fig. 3-4 Patron Cost Data for Third Year (Cumulative % of Searches Versus Cost Range)

There appeared to be significant shifts in user demographics across the 3 years of the project. Use by graduate students, education professionals, and business professionals increased steadily across all 3 years. Conversely, use by technical professionals, scientists, and undergraduate students decreased steadily across all 3 years. Both trends appear to correlate with observed changes in data base use.

While we have no data to explain this shift, it could be in part due to the imposition of search fees. Certainly charging for the service would tend to make clients carefully consider the utility of the search and, perhaps, to seek alternate solutions to their information problems. The proximity of San Jose State University to the San Jose Public Library helps to explain the large number of graduate students. The drop-in use by technical professionals and scientists might in part be explained by the withdrawal of the Redwood City and Cupertino libraries, which were the libraries closest to scientific and technological users. An alternate explanation is that continued use by a particular client group is directly related to the degree to which that group is well served by the library.

3.2.6 Value of Search to Patron

The value of the search to the patron for the entire 3-year period is shown in Fig. 3-5. It will be noted that there was a slight increase in perceived value in going from free search to one-half cost search to full-fee search. Some of the factors that may be operating are:

(1) The librarians became more proficient in use of the system
(2) The shifts in user demographics might be a factor
(3) People sometimes express more appreciation of a product when they must pay for it

3.2.7 Increased Patron Presence, Decreased Time Impact

Cooper and DeWath, Evaluation Annex, Appendix 2, noted that the patron was present for the search much more frequently (50% of the time) during the pay period (Year 2)

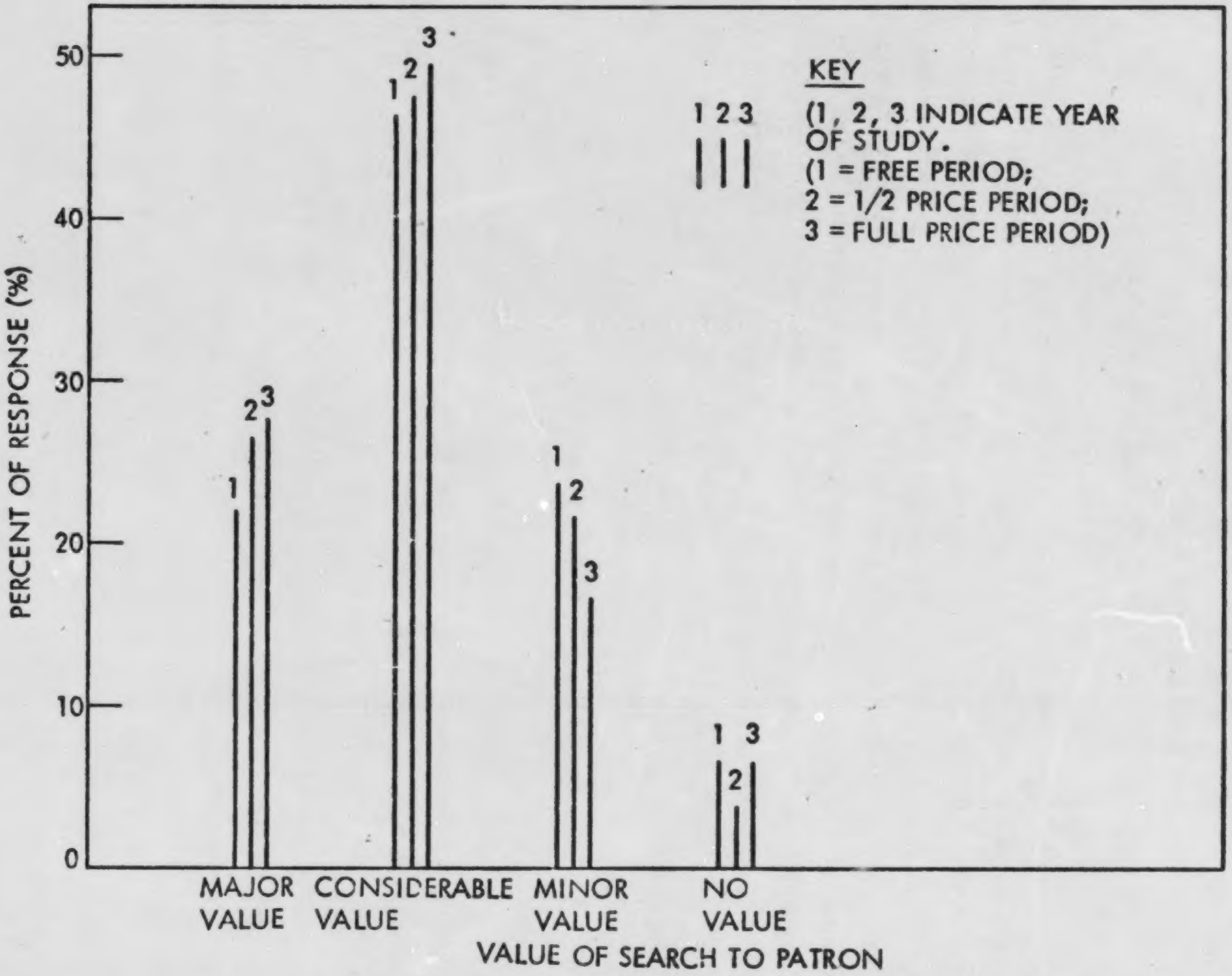

Fig. 3-5 Value of Search to Patron (% of Response Versus Value)

than during the first year free period (15%). They suggested that this was perhaps due to the increasing confidence of the librarians. Another reason, of course, is that the patron can assist the searcher in conducting the search, particularly in highly technical areas.

Data suggest that the time impact of the patron's presence on the search was significantly less during the pay period. During the free period, searches conducted with the patron present required almost 50% more connect time than did those conducted without the patron present. During the second year pay period, the increase in connect time due to having the patron present at the search was generally insignificant. This suggests that having the patron present at the search is no hindrance for the experienced searcher. The librarians in the DIALIB project who preferred to have the user present noted that the user can often provide useful information during a search.

3.2.8 Increased Inter-Library Conformity

As the libraries became more experienced in online searching, their time performance appeared to stabilize. Cooper and DeWath* noted significantly fewer differences between the libraries in Year 2 than in Year 1. Some differences in library style remained; however, the search processes appeared to become more uniform. The move from half-pay to full-pay generated very little change in library operations.

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*See Appendix of Evaluation Annex.

Section 4

PLANNING FOR ONLINE SEARCH SERVICE IN THE PUBLIC LIBRARY

One of the major goals of the DIALIB study was to develop guidelines that would be useful for public libraries contemplating online search service. This section uses material given in the Evaluation Annex to formulate such guidelines. The key requirements for online search service are first enumerated and discussed. A check list of questions that must be answered by a public library contemplating online search service concludes the section. A recent publication by the American Library Association, Ref. 7, will also provide search service planners with useful guidelines.

4.1 KEY REQUIREMENTS FOR ONLINE SEARCH

We have identified 9 key requirements for online search in the public library:

(1) Establish scope and limits of service. The online search service must be structured by the goals and objectives of the library and the needs of its patrons, and not by the potential of online searching.

(2) Staff time. The impact of online search on staff time must be carefully considered.

(3) Staff attitudes. Attitudes of library personnel toward the role of reference services, and toward fee-based service (where applicable) are crucial to the success of online service.

(4) Funding. A method of supporting the cost of online search service must be developed.

(5) Need for promotional planning. Methods of letting the public know about the existence and capabilities of the online search service must be developed.

(6) Need for ongoing staff training. In addition to the initial training, the librarians must have the time and budget to maintain and improve their competence by means of practice sessions, to critique searches among the staff, and advanced training sessions.

(7) Need for a critical mass of searches. The staffing should be such that a librarian can maintain a critical mass of 5 to 10 searches per month per data base.

(8) Document support. To provide effective searching, the library must be prepared to invest in, and maintain, adequate support documentation.

(9) Management and evaluation. Some method of evaluating the impact of the service on the library and on the community must be found.

These topics are discussed in more detail below.

4.1.1 Establishing Scope and Limits of Service

The first key requirement for a public library offering online searching is to define the scope and limits of service. Every library has some set of rules to define scope and service. Some rules are explicit – such as requiring cards to check out books. Other rules are implicit, for example, decisions as to how much time to devote to a particular type of question, such as a phone question. In addition, the library can also limit service without rules – by not making people aware of the service.

In offering online searching, the library must invest significant effort into establishing the scope and limits of the service. Issues which must be dealt with include:

- What are the goals and objectives of the service?
- Will the service be used to support internal operations, to provide service to patrons, or both?
- What limits should be established in terms of subject areas, costs, staff time, etc.?
- Will user fees be used to limit service?
- Who will be allowed access to the service?
- When will the service be available?
- What kind of service will be provided?
- What level of publicity will be used?

These are major questions. Determining the scope and limits of the service has major impact on other decisions which must be made. It is important that the service should be structured by the goals and objectives of the library and the needs of its patrons, not by the potential of online searching.

4.1.2 Staff Time Requirements

The staff time requirements associated with the introduction and provision of online searching cannot be overemphasized. Throughout the DIALIB experiment, staff time was perceived by the libraries to be the major inhibiting factor. Searches average approximately 1 hour of staff time (for query negotiation, search preparation, searching, and post-search activities). In addition, time is required for promotion, accounting, and training of search personnel.

Libraries planning to introduce online searching must very carefully consider the impact on their staff. They must be prepared to add staff to support the new service or to divert staff from other activities, if and when user demand develops.

4.1.3 Staff Attitudes and Support

Preconceptions and attitudes of library personnel toward fee-based service, and the role of reference services, play a great part in determining the direction and ultimate success of online searching.

More specifically, we feel that the attitudes and support of the head reference librarian and the library director are crucial to the success of online searching. Unless both are firmly committed to work for and support online searching, the probability for success is at best marginal.

The attitudes and support of the reference librarians who will serve as searchers are also important. However their reactions toward online searching in the public library will be determined, to a large extent, by the activities and opinions of the head reference librarian and the library director.

In developing a plan for online searching, it is vital that emphasis be placed on establishing and maintaining the support of the library staff – from the administration to the reference service to the circulation department.

4.1.4 Funding

The financial requirements for online searching can be divided into three categories:

(1) Capital (startup) costs include initial training, initial purchase of a computer terminal (if the terminal is purchased), purchase of documentation, and initial training costs.

(2) Marginal (or variable) costs are those costs that can be associated with a specific search. They include retrieval service costs (based on terminal connect time and printing charges), communication costs, and search-related staff time.

(3) Overhead charges are those charges that are specific to the online search service but cannot be associated with any specific search. These may include terminal rental (if the terminal is leased), terminal maintenance,* staff time for training (and also search-related staff time if not charged as a marginal cost), maintenance of documentation, and maintenance of training. Errors in searching can also be considered as an overhead cost.

Some specific cost values will clarify the subsequent discussion. The Cooper-DeWath study, summarized in Appendix H, shows an average cost of a search during the pay period as $26.44, including offline and online staff time and search service cost (connect time and printouts). If we assume 30 searches per month, we obtain the following costs:

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*Terminal maintenance is included in the leasing cost.

(30 searches/month)	($26.44 per search)		=	$ 800
(30 searches/month)	(1/4 hour connect time)	($8 per hour) communication cost*	=	$ 60
Terminal cost per month, including maintenance			=	$ 125
	Total monthly cost			$1000 (approx)

If we assume an annual budget of $500 for staff training, $500 for reference materials, and $500 for publicity, we see that the annual cost of an online search service performing 30 searches per month is $13,500.

A public library has the option of either supporting this cost from the library budget or grants, and offering the service to the public at no cost; or service can be offered at a fee that partially or completely covers the cost. If the service is supported by the library budget, then the library must develop policies which define and limit the services provided. In the free portion of the DIALIB project, the libraries did not place overt limits on the service. When they were confronted by rapidly increasing search requests, they opted for an implicit form of control – cutting off all publicity about the service. The lack of specific policies and rules for the online search service had a continued impact of the DIALIB project. This is an area which should be of prime concern regardless of whether the service is offered on a free or pay basis: the establishment of the scope and limits of service, as discussed in subsection 4.1.1, is strongly related to the funding question.

4.1.5 Need for Promotional Planning

Promotional planning is an essential part of the development of the online search service. Failure to promote the service will keep it from reaching its full potential. Printed signs, brochures and public announcement can be effective. However, demonstrations of online searches to potential users has been found to be one of the most effective ways of publicizing the capabilities of online searching. Small, portable terminals are now available that allow off-site demonstrations to be given to school, community, and business groups.

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*Most major cities in the U.S. have Tymnet or Telenet communications service to the search services at $8/hour or less.

4.1.6 Need for On-Going Staff Training

The library must also invest in ongoing searcher training on data bases. The search services generally offer 1- and 2-day training sessions in the use of their systems, and training in the use of specific data bases is generally offered by the data base producers.

Lack of specific data base training was a common complaint among librarians across all libraries and all 3 years of the project. In obtaining specific data base training, the library will confront three problems:

(1) Availability of training. Data base providers generally offer training sessions only a few times a year in various parts of the country
(2) Availability of personnel. Sending librarians to training presents a staff cost expense to the library
(3) Training costs. Many data base providers charge for training sessions and, unless the sessions are available locally, training may require travel and per diem costs.

4.1.7 Need for a Critical Mass of Searches

A critical mass of searches is required to maintain searcher competence. Most librarians interviewed agreed that 5 to 10 searches per month were necessary to maintain search skills for each data base. Certainly it is possible to conduct searches on a less frequent basis; however, the librarians indicated that they felt under these circumstances they were less efficient.

Search competence is concerned with specific data bases rather than general skills required to deal with the search system. This suggests that rather than have one or two searchers handling all searches, it would be more effective to train a number of searchers and have each specialize in only a few data bases.

Centralized searching for a library network, or a library system with branches, is feasible. Data show little difference in client satisfaction with results when the search is negotiated at a branch rather than the searching library. The data also show, however, that branch libraries in San Mateo County sent in few searches. Thus, although maintenance of a centralized search facility may provide the necessary critical mass, careful attention must be paid to training and working with branch librarians in order to have the branches forward questions to the search center.* Training should include familiarity with the online search service, an awareness of available data bases, and query negotiation.

4.1.8 Document Support

To provide effective searching, the library must be prepared to invest in and maintain adequate support documentation, such as Thesauri. Documentation is required for the search services, and for each individual data base. Some of this documentation is available free of charge; however, some must be purchased. Document cost for each data base used ranges from a low of $10 to $15 to a high of over $100.

There is a need for better data base documentation, search service documentation, and summary documentation, and such documentation must be periodically revised and kept up-to-date. In particular, we need:

- Brief data base guides, as well as detailed data base descriptions
- Guides that show similar search commands in each major service
- Documentation that compares data base characteristics along common dimensions, such as language, scope, or types of documents included and excluded
- Tabular and summary documentations and comparisons for at-terminal use

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*Appendix F briefly describes the problem of resource sharing.

Some work has been done in this area (for example, by the National Federation of Abstracting and Indexing Services, and by the American Society for Information Science), but more is needed.

4.1.9 Management and Evaluation

Another area which libraries should explore carefully is management and evaluation, particularly in accounting for staff time. It is essential that accurate data be collected to allow the library administrator to assess the impact of the search service — on the public, and on the library. This requires the establishment and maintenance of detailed procedures for recording staff time and activities.

If the service is to be offered on a fee basis, then additional procedures are required to govern the collection of funds.

If the service is offered via a network, then it is important that a single, uniform system be developed to transmit requests to the searching library and to transmit search results back to the requesting library or to the patron.

Evaluation is extremely important. This includes evaluation of (1) impact on the library, (2) user impact, and (3) the quality of the searches produced. It is essential that some procedure be developed to collect user feedback to assist in the evaluation. Unfortunately, procedures for assessing the quality of searches are still ad hoc in nature, and research remains to be done in this area.

4.2 A CHECKLIST OF QUESTIONS

From the preceding discussion of requirements for online search in the public library, we can derive the following checklist of questions for use as a planning guide:

(1) Underlined: Should we offer online search service?

- What goals will we attain by offering this service?
- Do we have experience in indepth reference service?

- Do we have a potential user group?
- Is the staff positive toward offering such service?
- Are the data bases offerred by the retrieval services pertinent to the needs of our patrons?
- Can we provide adequate funds for staff, search service costs, and terminal by either library budget or user fees or a combination of both?
- If user fees seem necessary for budget support, can the fees be persuasively justified to funders, to the library staff, and to library patrons?

(2) What level of service should we offer?

- How many reference librarians can we devote to this service?
- Do we want to actively solicit users?
- What should our policy be for requests that come from outside of our service area, e.g., out of district users, request from other libraries?
- Should we offer all available data bases or concentrate on just a limited number?

(3) What about the details of setting up the service?

- Should we place the terminal in an open area or do we want this to be a "back room" operation?
- How many librarians should we train?
- What reference aids do we want to purchase in support of the service?
- What type of publicity should be used?
- If a fee-for-service approach is to be used, what bookkeeping and billing arrangements are to be used?

(4) How can we control the activity?

- Do we want to prevent individuals or companies from frequent use of our service, and if so, how can this be done?
- What records do we want to keep on search time and search activity?
- Do we want to monitor user reaction to our online service?

(5) How can we evaluate the effectiveness of the system?

- What evaluation techniques can we use to obtain user reactions?
- Can we develop a means of comparing manual and online search activity?
- How can we evaluate the impact of online search service on the library?
- How can we evaluate the impact of online search service on the community of library users?

Section 5
CONCLUSIONS

This section summarizes three general aspects of online search in the public library, (1) the market for such services, (2) the impact of online search on the library, and (3) the question of fee for service in the public library. For further details on these topics, see Section 5 of the Evaluation Annex.

5.1 THE MARKET

Online searching has been expanding rapidly from a highly specialized service available only to, or through, government agencies, to a service that is available to hundreds of academic libraries and industrial users. Heretofore, however, it has not been available to the general public. Until the advent of DIALIB, only people associated with large organizations had access to the scientific, technical, and business-oriented data bases available through Lockheed, and other vendors.

The DIALIB experiment has shown that there is a market for existing data bases. It is made up of employees of small businesses; of students from colleges and universities who do not otherwise have convenient access to online searching; of individuals who are starting up a business, doing personal research or investigation; and of local government officials. Other users of the service came from government agencies of all sizes and descriptions, and small high-technology firms. These people appear to have a need for access to online searching and may have no other point of access. They have been vocal in their endorsement of the public library as a linking agent to the data bases, and have been willing to pay for the use of the service.

Unfortunately, it is not possible to estimate what usage of the service would be if the libraries were able or willing to engage in a modest amount of advertising. The service was publicized vigorously when the DIALIB experiment began, using demonstrations, posters, brochures, newspaper stories, etc. Since the searches were free during the first year, demand soon began to tax the staff resources of the participating libraries. The publicity led to a demand that appeared to be greater than they could handle. Additional promotional efforts were halted. Although the demand during the second and third years of the experiment was less than the libraries felt they could support, they were unwilling to authorize further publicity. As a result, most users of the service during the second and third years heard about it through word-of-mouth.

We feel that the DIALIB project showed that the public library has the potential for serving as a linkage agent between the market and the online search services.* As indicated in section 5.2, provision of online search service through the public library can be viewed as a natural extension of its current reference services, requiring many of the same skills currently used. However, the future of online searching in any particular library will probably rest in large part on the attitudes of the people providing the service.

5.2 ONLINE SEARCH AND THE PUBLIC LIBRARY

This subsection briefly indicates some aspects of librarian training related to online search, and discusses the role of in-depth search in the public library. Some changes to be expected in a public library offering such service are also noted.

5.2.1 Connection Between Manual and Online Search Skills

The traditionally trained public librarian does have a variety of skills that are directly applicable to the kinds of skills required in online searching. These include the ability to form an adequate search query by consulting with the user and encouraging the user to communicate his needs fully. The traditionally trained reference librarian is already expert with complex manual tools – thesauri, indices, etc., – and the skills developed with these tools are transferable to computer data base searching. There is considerable evidence that traditional reference librarians are willing and able to learn data base search techniques.

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*Other possible linkage agents are college and university libraries, and private information brokers. See Evaluation Annex, Section 6.

5.2.2 Librarian Skills and Training

Many librarians involved in DIALIB became skilled online searchers although most would agree with one of the conclusions from the Interim Report that to maintain search proficiency, "...online searchers must complete some 'critical mass' of searches each month in each data base for which proficiency is desired; the large number of different data bases makes it difficult for an individual to maintain a thorough knowledge of each data base...."

There appear to be two problems – training on specific data bases and subject skills. Many DIALIB searchers complained about the lack of training on specific data bases and emphasized the need for such training. Each data base is unique; it has its own organization, thesaurus, and idiosyncracies. While it is possible to search the data base with little or no training, the quality of a search is to a large extent determined by the training and experience of the searcher in the data base being searched.

The second problem area has to do with subject expertise. For research queries of greater complexity than "simple fact" questions, many people feel that the searcher should be a subject expert. It is felt that a librarian searching Chemical Abstracts, for example, cannot do a good job on some complex questions without a knowledge of chemistry. If a library does not have a subject specialist (e.g., science, technology, business), then this problem can be at least partially resolved by having the patron present for the search to assist the searcher. (This assumes, of course, that the patron has some knowledge of the search topic area.)

5.2.3 The Role of the In-Depth Reference Searcher

How much time actually is spent by a public librarian in lengthy, in-depth, personalized searches for a client? The answer seems to be that the majority of public librarians (including reference librarians) spend very little time conducting such searches.

Online search could, perhaps, be viewed as a custom information package or personalized library service. As such it could be considered a new type of service, not simply a faster, cheaper way of carrying out an old service.

In general, there appear to be few precise reference/information policies in public libraries which establish limits in terms of services offered, topics covered, patron eligibility, and allocation of staff time. Public libraries have been able to live with informal limits because the demands placed upon reference service have not been that great. One major result of the DIALIB experiment has been to focus attention on the reference function in the public library. Given the rapid advances in information technology, it would seem considerable thought should be invested in determining what the reference function of the public library should be in the future.

Writes one commentator: "It would seem, that we have not honestly or realistically decided upon a philosophy concerning the nature and scope of these services. How much service do we provide for whom, when, where, and at what level?" (Ref. 8.)

5.2.4 Changes to be Expected in the Library

The introduction of online searching into the public library setting gives the library a chance to change its image by expanding and deepening its services. The computer allows the public library to offer personalized data base search services, for both individuals and organizations. Such services can expand the library's clientele, and make it a more useful information resource to these segments of the population.

5.3 FEE FOR SERVICE IN THE PUBLIC LIBRARY

An important result of the DIALIB experiment was that, contrary to expectations, no problems were experienced in the mechanics of billing and fee collection, and that comments by the patrons were favorable to paying a fee for the search service. The only problem associated with charging for this specialized reference service in DIALIB was dealing with the philosophical concept of fee for service. Once this was accepted by the administration, the actual mechanics of collection and patron acceptance offered no difficulties. Furthermore, there has been no tendency to extend the concept to traditional services within the participating libraries. We should note, though, that no study of non-users was made: we do not know whether fees deterred some individuals from using the service.

We are well aware of the strong views on fee for service, best summarized by two quotes taken from the 1977 American Library Association meeting:

> How did we get to such a point of horrendous surrender of principle in scarcely more than a quarter-century since the simple moral declaration in the Unesco Public Library Manifesto, that a public library 'should be maintained wholly from public funds, and no direct charge should be made to anyone for its services.'?
>
> Eric Moon, Inaugural Address,
> President American Library Association
> 96th Annual ALA Conference, 1977

> Of course, you want library service to be "free" or as low cost as you can make it. But is it better to hold to some abstract principle of freedom and deny service? There is a history of things starting out on some commercial or quasi-commercial basis and then becoming free. Gradually society will perceive the importance of these services and provide tax money to make them free.
>
> Ervin Gaines, Director
> Cleveland Public Library
> 96th ALA Conference, 1977

As the August 1977 Library Journal states:

> The fee debate will be with us now, for years to come. We've only begun, and by the time we're finished, we'll have had opinions from the information industry, from government, and from citizens and taxpayers about how we should support library service.

In the DIALIB reports we have tried to indicate the time and cost elements, and the many organizational and staff aspects involved in online search in the public library. We hope that such factual information will be useful to those on both sides of the fee-for-service question.

Section 6
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Appendix A
LIBRARY PROFILES

This appendix presents a brief profile of the participating public libraries. For a more complete profile, see the Annex I volume of the Two-Year Interim Report, Ref. 2.

A.1 SAN JOSE PUBLIC LIBRARY

The San Jose Public Library consists of a large central library and 15 branches, and serves a large municipal area. The San Jose Public Library is the only CIN library participating in the study which operates a municipal reference service staffed by a full-time professional librarian. The reference staff at the main library consists of 19 full-time librarians, and 7 part-time librarians. San Jose participated in the full 3 years of DIALIB, and continues to offer online service.

A.2 SANTA CLARA COUNTY LIBRARY

The Santa Clara County Library is a large system with 13 branches located throughout the county. The DIALOG terminal was located at the research library in Cupertino, the backup reference resource for the County. The Cupertino Library has a reference staff of eight persons. This library participated for a little over 2 years of DIALIB; it no longer offers online service at this site.

A.3 REDWOOD CITY PUBLIC LIBRARY

The Redwood City Public Library consists of a main library and two small branches. Redwood City has a reference staff of 5 individuals. Of the 4 Project DIALIB libraries, Redwood City had the largest turnover of staff during its 2-year participation. Although all staff members performed searches, only 2 of the original staff conducted searches throughout the free and pay periods. Redwood City no longer offers online service.

A.4 SAN MATEO COUNTY LIBRARY

The San Mateo County Library is a large system with 14 branches located throughout the county. DIALOG service was provided through the San Mateo County Library Headquarters located in Belmont. Unlike the other libraries participating in Project DIALIB, the majority of online patrons at San Mateo were not "walk-in" patrons. The San Mateo County Library began with 3 full-time reference librarians and a reference supervisor, but lost one of the reference librarians in the third year. San Mateo County Library continues to offer online search.

A.5 LONG ISLAND LIBRARY RESOURCES COUNCIL

The Long Island Library Resources Council (LILRC) is one of 9 regional corporations administered by the New York State Commissioner of Education. The Council consists of a group of public library systems (and their member libraries); libraries in institutions of higher education, and other non-profit organizations; and libraries in for-profit business or commercial firms. LILRC participated for 6 months to provide subjective evaluation of the service. Online search is now offered for special requests only.

A.6 CLEVELAND PUBLIC LIBRARY

The Cleveland Public Library serves primarily the city of Cleveland, although persons from all Northeastern Ohio regularly use the facilities. In addition to the central Main Library building, there are 33 branches located throughout Cleveland. In September 1975, the library initiated "Facts for a Fee" – a fee-based reference service – in response to requests for information beyond the scope of library policy on free research and outside the library's geographical area of responsibility. Facts for a Fee, aimed at business and industry, is available on a contractual basis at $25 per hour. There is a minimum charge of $25. The staff includes 3 part-time individuals. The library participated for 6 months to provide subjective evaluation of the service, and continues to offer online search.

A.7 HOUSTON PUBLIC LIBRARY

The Houston Public Library serves the metropolitan Houston area and includes 25 branches. A fee-based reference service, called Business Information Service (BIS), was in existence at the library for about 1 year prior to the introduction of DIALOG. BIS charges patrons $15 per hour. However, patrons do not have to go through BIS to obtain a DIALOG search. Those patrons who have searches done independently of BIS are charged only for connect time and for offline prints. No charges are made for staff time. Currently, the reference department at the Houston Public Library handles about 21,000 reference requests per week. The library participated for 6 months, but no longer offers online search.

A.8 MINNEAPOLIS PUBLIC LIBRARY

DIALOG service at Minneapolis is operated through INFORM, a fee-based research service of the Minneapolis Public Library and Information Center whose purpose is to provide information on demand and in a usable form. The INFORM staff consists of one full-time librarian, one part-time librarian, and one clerical person. Charges for the service include $25 per hour for professional time, and charges for photocopying, long distance calls, and any other expenditures made on behalf of the client. The minimum charge for a new client is $25. Since 1970, INFORM has handled about 600 information searches annually. INFORM participated for 6 months and continues to offer online search.

A.9 TULSA CITY-COUNTY LIBRARY (INFO II)

INFO II is a fee-based research service that charges a professional fee of $25 per hour for doing research for clients. Any other costs that are incurred during a search, such as online searching, long-distance phone calls, or photocopying, are also directly rebilled to the client. INFO II is currently operating only 20 hours per week and has a staff of one. Search volume is increasing and they hope to be operating full-time by January 1978. Clients are business and professional people from large corporations, small businessmen, consultants, government personnel, and individuals. There is little use by the academic community since the University of Tulsa, although not doing online searching in an organized manner, serves its community well and the Tulsa branch of the University of Oklahoma's Medical School does Medline searching for its students as well as for the medical community. The questions received cover highly technical engineering and chemical subjects, management and marketing data, and the area of grants and foundations. The library participated in the third year of the study for subjective evaluation purposes, and continues to offer online search.

Appendix B
LIBRARIAN COMMENTS

We felt that it was important that the participants give their perceptions about DIALIB without an intermediary translating or "interpreting" what happened. We therefore have included this appendix, consisting of two parts (1) formal statements by several librarians, and (2) comments from many librarians organized into various topic areas. There are many differences of opinion, and this is usually traceable to the particular library situation. The individuals and their affiliation are given so that the reader can relate the comments to the Library Profiles in Appendix A.*

B.1 FORMAL STATEMENTS

- Barbara J. Campbell, County Librarian, County of Santa Clara

The Santa Clara County Library, through our membership in the Cooperative Information Network (CIN), was invited to participate in the experiment to show the value of the DIALOG service in a public library setting.

Several very positive results can be identified. First, in my mind, is an expansion in visibility to different segments of our communities. It seems increasingly apparent to me that if libraries are going to "make it" during the next decade in the scramble for the limited available funds, the library program must be made more vital and important to the community and particularly to the community leaders – those controlling the funds. DIALOG helps dramatically in this area. A segment of our public discovered that the modern public library has a sophistication beyond what they had imagined. Equally important in our case, major segments of County government were made aware of DIALOG's value, and I expect this to have very favorable long-range impact. This happens to be a current "soap-box" of mine – that libraries must use every conceivable way to become important to their communities. DIALOG helps.

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*An asterisk is used to indicate a comment that did not appear in the Two Year Interim Report.

Second are the benefits to the staff. Our staff, while feeling pushed and pulled, enjoyed the experience – the challenge, the opportunity for professional growth, and the pride in offering a new depth of service.

Now to explain why we dropped the program in the third year. In our area, as in most places, we are involved in cooperative efforts, and we are active in our South Bay Cooperative Library System. The Santa Clara County Library is a group of community libraries. My hope is that we will offer the best in direct community library service, given limited funds. This year we have had to face program cuts to balance to available funds. In the DIALOG experiment our County has had two terminals, at our Cupertino Library and at the San Jose Public Library. Usage currently supports one terminal for our region, and I feel we should follow the structure of our cooperative system. Therefore, the one terminal should be located at the San Jose Public Library.

As far as administering the program, any pressure was not on administration, but on staff. Our Department of Finance has always taken a most helpful attitude in working out new programs in the most direct and uncomplicated way, so we had no problems in setting up the program.

Because the staff wanted to give the service, they minimized the problems, and they worked out solutions.

- Homer L. Fletcher, City Librarian, City of San Jose, California

I have been most pleased with the success of the DIALOG project. As our first experiment with online information retrieval, the project has been a valuable learning experience for administrators and reference staff, as well as the general public. We have been given the opportunity to observe, first hand, the benefits of this highly sophisticated service, and feel that a new dimension in library service has become available to us and to our patrons.

At the outset, two concerns surfaced from our point of view. First, the Cooperative Information Network Board of Directors took on the project without getting input to any extent from the public libraries who would have to do the work. Second, Lockheed was hesitant about releasing budgetary information about the project even though it was supported by public funds.

During the free period, the primary problem faced was that of inadequate staffing. The San Jose Library had lost thirteen positions in 1974–75; all from the Main Library. Because of the fact that no staffing had been furnished through the NSF DIALOG grant, our already depleted staff resources were further strained as DIALOG became a high-demand service. A staff recommendation to terminate the experiment was carried to the City Council. Council chose to continue the project. Following this action, it became necessary to adjust and reschedule DIALOG service hours. It is clear that staffing is a significant factor in the success of DIALOG service. We would urge any potential DIALOG user to appropriate adequate additional funds for personnel prior to installing the service. We do not feel that library patrons can benefit from the service to the fullest extent if overall staffing resources are strained. It follows, too, that staff enthusiasm for DIALOG may wane under adverse staffing conditions.

The fee/nonfee issue in public libraries is a philosophical question that was discussed thoroughly by San Jose Library administrators. The decision to charge fees was made by the City Librarian following this discussion. This was a clear choice in view of the fact that, since no funds could be budgeted, a nonfee decision would mean removal of the service; a service which had proven itself valuable to our patrons.

We have been so favorably impressed with the service and information available through DIALOG that we are considering the possibility of an additional terminal for our Municipal Reference Library which has just been moved to City Hall from the Main Library.

- Jane Colwin,* INFO II Research Librarian, Tulsa City-County Library

INFO II's growth since September of 1976 can mainly be attributed to the demonstrations and presentations we have given. This would not have been possible without the help of the DIALIB project funds. We have given approximately 40 presentations – to individuals who stop in the office, to small groups of business or government people at their facilities, and to large groups of professional people at their society meetings. These professional groups include the Tulsa Chapter of the American Society for Metals and the Tulsa Geological Society. Our typical presentation includes an introduction to INFO II, a description of online searching, usually done using overhead transparencies, and then an actual online demonstration using the terminal to find information related to the group's primary interests. These presentations are always successful, bringing us new clients and furthering our word-of-mouth publicity.

Other publicity efforts have included: (1) Two good feature articles on INFO II that appeared in the local press. Although they appeared in March, we are still getting results. (2) We are also researching financial information for a local business magazine and receiving a byline and free ad space in return. (3) Regular articles in our own newsletter INFO highlight the service and particular data bases.

Our billing procedure is simple. Clients are sent a statement of charges when the search has been completed. They, in turn, send us a check. This has caused no problems whatsoever. An alternative to this pay-as-you-go method is INFO II's deposit account system. Some clients deposit a $250 minimum with us, enabling them to a lower professional search fee of $20 per hour and priority service. Costs of their searches are deducted from this deposit, thereby doing away with billing for each search.

Staff response to INFO II and online searching has all been positive. As a part of our participation in the DIALIB project, we requested some online time to be used for training. Six members of the Business and Technology Department staff and one member of the Reference Department staff attended a 4-hour training session given by myself. The staff members are encouraged to use the terminal for practices or actual searching, but they have not taken advantage of the opportunity. It has been more efficient and convenient for the questions to be referred to me. A demonstration I did for the library's Middle Management Group was well received. In a library system with 18 branches, it is important that librarians in the branches be aware of online searching so that patrons can be referred to INFO II.

The few problems we have encountered are not unique to INFO II. Other librarians in similar positions have expressed them also.

The biggest problem is publicity and educating the public to appreciate the value of online searching and use it. Personal demonstrations are our best method. Setting them up and giving them, however, takes time. Newspaper articles have produced results but can only be used to feature new services, not on a continuing basis. Word-of-mouth publicity is very effective but slow. In the long run, it will be the most valuable. The mass mailing which we tried at INFO II's inception in November 1975 was a total failure.

Another problem is locating quickly copies of articles and reports found through an online search. Interlibrary loan is usually the slowest alternative, but it is the one we still use most frequently. This has not yet put a burden on our interlibrary loan staff, but I do see it as a possible problem.

I have no qualms about charging fees for the types of service INFO II provides. Everyone connected with any phase of INFO II's inception and operation, from our Library Commission on down, has been supportive of this position. I strongly believe that customized service should be paid for by the individual who requests it. We are charging users fees for the professional service we offer, not for the actual information we provide. Anyone can buy or lease a terminal and sign up with a data base supplier, but only a trained searcher with experience can use the online systems to their best advantage. In the same manner, anyone can come in the library and search most of the same information in the printed indexes. INFO II provides a cost-effective and efficient alternative to this do-it-yourself method. Most of our clients feel that the fees they pay for information are "worth every cent" or surprised that all we charge is $25 per hour.

Overall satisfaction with our service is very good. Our clients are mostly repeat users and very glad a service such as ours is available to them. Our library staff members are supportive and are glad to be able to suggest an alternative to patrons whose information needs cannot be serviced through normal library operations. Before the establishment of INFO II, we had to tell patrons such as this that "No, we could not do the research for them" and then show them how to do it on their own. Now we can offer them a choice.

In summary, I believe the public library is the place where the public should go for online searching and that, in our case, the charging of fees has not been a hindrance.

- Lisa H. Naef, Head, Adult Reference and Reader's Advisory Services, Redwood City Public Library

Servicing a population of approximately 55,000, Redwood City Public Library has a main library situated downtown, a branch in a residential area, and supports a small library in a community center.

Our computer terminal was allocated to the Redwood City Public Library (hence after referred to as RCPL) which was placed in the main library reference/reading room. The terminal is Western Union Data Services 300 Impact Printer at 30 characters per second and is not portable. Although we do not enforce a silence code, we received so many complaints about the noise the terminal generates while in service, that NSF agreed to provide an acoustical cover for the machine. Since the cover was installed, we have had no complaints about the noise.

The RCPL reference staff consists of five librarians (including the unit supervisor). All five librarians are searchers on the DIALOG system. Each librarian attended one all-day introductory workshop on computer search techniques. Any additional skills have been acquired by experience and the use of manuals provided by Lockheed Information Systems.

The five librarians are generalists, although one staff member, Mr. Thomas Kam, has a more specialized knowledge of business, science, and technology than the others. Until February, 1976, RCPL ran the computerized information retrieval system on a drop-in basis. But the planning of a search strategy and the explanations to the patron took up so much time, we began to require that appointments be made. The computer is online only until 5:00 p.m. Monday through Friday Pacific Standard Time, and until noon on Saturdays. Fridays and Saturdays were not good days to run DIALOG searches as RCPL is short-staffed on those two days each week, due to rotating weekend schedules.

Since June, 1975, we found that most DIALOG system users were graduate students doing research papers or dissertations. Few users were repeaters. Some business firms, primarily engineering firms, used the DIALOG system at RCPL. Most users of our DIALOG services were not Redwood City residents, nor were they employed in Redwood City. In fact, 50% of the users did not reside or work in our county. The maximum number of searches we ran any one month was 39; the minimum was 7. We found that the staff spent anywhere from 30 minutes to 1-1/2 hours in explaining the DIALOG system and planning a search with a patron. We tried to encourage patrons to be with the searcher when we ran their searches.

Not being used to charging for our services made us perhaps too aware of the cost factors of the searching. We thus spent a great deal of time preplanning our searches and then running a very tight, preplanned strategy on the computer. Many patrons stated that they came to RCPL for DIALOG services because it cost less than going elsewhere. Frequently patrons asked us to limit the cost of their search to under

$15. This request increased the anxiety of the librarian who often felt her understanding of the data bases left much to desire and the patron would not get what he was paying for.

To ease this anxiety and to be fair to the patron, I would recommend that money be allocated in budgets to absorb the cost of errors made by searchers (such as running the search in the wrong base).

DIALOG has expanded from 20 bases to over 30 in less than 6 months. As more data bases were loaded onto the system, we at RCPL became less sure of our abilities to meet patron requests. Some of the files were problems because none of us have either the subject knowledge to understand the search request or an understanding of the standards and procedures used in compiling the index or abstract services being tapped. In bases like BIOSIS, we had problems comprehending the different codes and deciding how to combine them to "hit" what our patron was seeking. In my opinion, libraries who offer this type of service will have to send their searchers to indepth training sessions on the structure of the data files and to more advanced workshops on computer manipulation. Libraries will have to budget time and money to send their searchers to the various seminars offered by the "publishers" of the different data bases. Costs range from no charge to $150 or more per person per session.

The five librarians who provided DIALOG services at the Redwood City Public Library have come to some conclusions about the services. While the idea of computerized information retrieval is very exciting, the DIALOG bases are too specialized bibliographic tools, and too costly to be used by the general public. We believe these data bases probably are put to better, more frequent use in a larger library. Our medium-size library does not have the periodical and document collections to provide the materials cited in the bibliographies obtained through the computer. This lack means that our patrons either have to wait for us to obtain the desired material by interlibrary loan or they go to another source. If the Reader's Guide to Periodical Literature were computerized or local statistics such as the crime rates in town, I think information retrieval services would be used by Redwood City residents. The DIALOG data system is not the ideal one we should be offering. Although we started this project with great enthusiasm, we find that we do not have enough staff to offer as good a computerized information retrieval service as should be possible with DIALOG. We do not have the time to take serveral hours each week to study the manuals and to practice on the equipment.

DIALOG did not lead to an increased use of our library as a unit by community residents formerly not library users. Most DIALOG users came to our library for that purpose only: to get a search done.

At the end of the NSF grant period, June 1976, DIALOG services were discontinued at the Redwood City Public Library for the reasons I've described. However, we did gain an invaluable experience in the use of computers in the library. Additionally, we reinforced and improved our reference interview techniques in working out search requests with DIALOG users. We hop that when data bases that we feel can be more appropriately used in a small library are computerized, that we will be able to offer such services again. Mr. Oscar Firschein was most helpful to us throughout the NSF project as were his colleagues in Lockheed Customer Services.

- Charlotte Sakai, * Reference Librarian, San Jose Public Library

San Jose Public Library has always offered indepth reference service for free to our library users. One service we were not doing was compiling bibliographies for individuals. Since we were automating the circulation and cataloging systems, it was a natural extension to offer an information retrieval system. The City Librarian decided to have DIALOG for a fee, charging the direct DIALOG cost to the end user. Otherwise, we could not offer the service in these days of budget constraints.

We found that people who do not normally use our library service were coming in to have a DIALOG search. Most of these people, some coming from 50 miles away, were graduate students or researchers who were willing to pay for their time saved on literature searching. DIALOG also made available to these people indexes not normally found in a public library. (We duplicate about 10 titles in the hardbound format.)

We have four operators plus a municipal reference librarian doing searches. The operators were selected on their subject background and aptitude. To coordinate available staff time to the number of DIALOG requests, we requested that all searches be done by appointment. We found that appointments ensured time for a thorough reference interview and having the patron present during the search. This method resulted in satisfied customers.

In regard to our daily reference work, we use DIALOG mainly for bibliographic verification, as we use OCLC for verifying a book title. We also use DIALOG for subject (search) requests about twice a month. There is a budget for librarians' searches.

Our current level of DIALOG requests is at a comfortable number for our operators to handle without feeling strained. That is the main reason why we have not been publicizing the information retrieval system widely. We could not handle any increase without adding another operator. Most of our DIALOG requests are referred to us by word of mouth or by librarians in the Cooperative Information Network.

San Jose Public Library tries to offer and maintain those services requested and needed by the variety of people using the public library. Our library users are becoming increasingly sophisticated in their demands for information and materials, especially here in silicon valley. DIALOG is just one service to meet such demands.

- Ann Scott, * Reference Coordinator, San Mateo County Library

This is an overview of 3 years of participation in the DIALIB/DIALOG Project by a supervisor and participant. During the first year of free service, I participated in the training, some of the demonstrations, and some of the searches; Nancy DeWath did most of practical organization involving designing of forms and procedures. In the second year, due to staff changes, my participation increased and has continued through the third year; this participation included conducting searches, interviews, giving explanations to patrons as to service and costs, and attending training sessions given by Lockheed and individual data base vendors.

Staffing has been a major problem since the beginning. The Reference Division is composed of generalists who are accustomed to do in depth manual searches for subject requests. In the first year, our complement was four full-time Reference Librarians, including the Coordinator; due to staff changes, we operated at 3 full-time employees for most of the second and third years. As our regular workload did not decrease nor were the hours of service (69 hours a week) reduced, considerable pressure was felt by the staff.

The explosion of data bases from the original 15 or 16 to nearly 60 by the end of the third year kept us all busy trying to keep current. The Lockheed User Update sessions were invaluable; at one of these, Robert Donati demonstrated a number of short cuts and handed out examples of the short cuts; these became a review source for all us. The information provided about data bases seemed skimpy to us; the feature of getting the information online is an expensive one for Data Bases which cost 95 dollars an hour; it would help a great deal if as Data Bases are added, the discrete characteristics could appear with the general information; this would include sample search. Because each data base has its own individual characteristics, one must constantly review before starting a search; a comparative display of how to search for authors, free-text searching, etc., would be most helpful. Some of this has appeared in recent Chronologs, but this necessitates searching Chronologs which is time consuming.

Training in general could have been better over the 3-year period, especially as new data bases are added. Perhaps this presents no problem in the Special Library, where hardcopy of some of the indexes are used regularly, but where the whole index is a new area, I found myself at a disadvantage.

The explosion of data bases makes DIALOG more attractive, but brings one in contact with whole new world of abbreviations. When there were only 15 data bases, one had a very good idea what to suggest to a patron. Now the number and variety of data bases, with considerable overlap, severely complicates this. The Lockheed publicity seems to be of a market approach rather than a consumer use. The pamphlet which came out in the third year is one of the better efforts, but even it needs to be updated for the newer data bases. During the first year, the best information we had came from Forrest Carhart's METRO System. It is too bad that everything has to be reinvented by everyone and that there isn't more sharing; perhaps this is a responsibility of the Libraries concerned rather than Lockheed.

Publicity has been a problem since the early days of the project and I have to assume it will continue. We had lots of vivid and attractive publicity, but it did not really attract a great many patrons. Communications is difficult when knowledge is common to all; patrons came expecting to see a computer rather than a terminal, to put in specific problems and get exact answers rather than bibliographies, to find an answer to a question for which no data base was available. This is still occurring although a number of referrals during the third year came as result of professors, friends, or previous experience with the system when it was free. Evidently there are flyers around which still give the four public library locations so some patrons really have to be serious to find the 2 locations.

The availability of DIALOG in the Public Library seems to me to be an added dimension of service as well as a step to changing the image of public library service. The data bases are still geared to research and science more than the general public, which means the users are generally in business, college/university, researchers, but rarely the general public on a general interest. If and when the more common indexes such as those of the Wilson Company become available, usage by the general public will be very noticeable and there will be a better acceptance by Public Library staffs. The problem of serving patrons from outside a service area has arisen but has not yet become critical; there are at least two commercial services available in the Bay Area, (Information Unlimited, Berkeley, and WESRAC, Palo Alto), as well as the service offered at Stanford University and University of California at Berkeley. As stated previously, some professors in business courses have added DIALOG search to course requirements; this presents a problem but provides an experience for students for future use.

The charging of fees presented no problems other than the administrative work with handling checks (which was what we received rather than cash) and processing bills. I was the one who did this and it is time-consuming; some of the time has been reduced since costs have been shown on the search; this relieved the Librarians from having to figure computer time, charges, etc. The free period still hangs around and we still get calls about it, but an explanation as to the project and its stages clears that up. We have had accounts opened by agencies, institutions, and businesses which really worked out very well. During the third year we required a down payment/deposit of $5 and the balance when results were received. All of us feel very conscious of cost when doing a search now that the patron is paying the full computer time, so more time is spent in preparing for the search than in the past. For my part, the past 3-years experience has given me greater skill in forming concepts and developing search strategy, which makes it easier to deal with patrons and the computer.

Hindsight is always better than foresight. I feel better in-house training on data bases and their content could have taken place during the free period. More exposure for Branch Librarians/Reference Librarians would be provided. Better material, even if locally produced, on the data bases and what they covered would be prepared. The preparation of some local aids for the searchers would be done.

I feel strongly there is a place for DIALOG in Public Libraries but librarians have to accept the idea of computers and what they do without feeling inadequate to deal with them. Charging for DIALOG service does not seem out of line; libraries charge for rental typewriters and for copiers, which are special equipment in a certain sense. DIALOG is special also, but may become less so as more data bases of common interest appear.

B.2 COMMENTS

Comments regarding the DIALOG project were solicited from all the participating librarians. Comments were received from 19 individuals from a total of 7 libraries, both in written and tape-recorded form. The individuals are:

- Charlotte Sakai, Reference Librarian, San Jose Public Library, San Jose, California
- Bob Johnson, Documents Librarian, San Jose Public Library, San Jose, California
- Robin Kendig, Municipal Reference Librarian, San Jose Public Library, San Jose, California
- Rob Luchessi, Municipal Reference Librarian, San Jose Public Library, San Jose, California
- Scotty McEwen, Science Librarian, San Jose Public Library, San Jose, California
- Phyllis Parker, History Librarian, San Jose Public Library, San Jose, California
- Judith Neufeld, Assistant to the Director, Long Island Library Resources Council, Inc., Bellport, New York
- Ann Landtroop, Head of Business, Science, and Technology Department, Houston, Texas
- Carol Vantine, INFORM Librarian, Minneapolis Public Library, Minneapolis, Minnesota
- Lois Thomas, Head, Research Center, Santa Clara County Library, Cupertino, California

- Dale Thompson, Regional Librarian, Santa Clara County Library, Cupertino, California
- Alison Holtby, Reference Librarian, Santa Clara County Library, Cupertino, California
- Charlotte Doudell, Reference Librarian, Santa Clara County Library, Cupertino, California
- Eric Kristofferson, Reference Librarian, Santa Clara County Library, Cupertino, California
- Lisa Naef, Head, Adult Reference and Readers' Advisory Service, Redwood City Public Library, Redwood City, California
- Nancy DeWath, Reference Librarian, San Mateo County Library, Belmont, California
- Anna M. Scott, Reference Coordinator, San Mateo County Library, Belmont, California
- Beth McNabb, Reference Librarian, San Mateo County Library, Belmont, California
- Wayne Smith, Reference Librarian, San Mateo County Library, Belmont, California

These comments have not been edited, but have been organized into topic areas, based on suggestions by Nancy H. Knight. We have selected the comments from the Two-Year Interim Report that are still pertinent. We indicate comments submitted at the end of the third year with an asterisk.

The topic areas are:

B.2.1 Effects of Online Search on Library Image
B.2.2 Effect of Online Search on Allocation of Library Resources
B.2.3 Fee and Free Service
B.2.4 Training and Allocation of Staff Using Online Search
B.2.5 Use of DIALOG for Reference
B.2.6 Need for Publicity to Promote Use of Online Search
B.2.7 Who Are the Users (and Nonusers)
B.2.8 Other Topics

B.2.1 Effects of Online Search on Library Image

Librarians suffer from a bad image problem. We find people surprised that a librarian can access information without knowing much about the subject. I am pleased as to what online searching does for the image of the librarian. Online search is a strong selling point which shows people that the librarian is dealing with information in a modern way.

I have found the experiment to be totally satisfactory in enabling me to educate information users as to why an understanding of the organization of information is important, and why it should be done by a professional, as well as a subject specialist. It has really given a polish to the librarian's image in the eyes of business and scientific people.

The business community initially has some difficulty in understanding that we are getting bibliographic citations, and that it is necessary to look at the source materials to see whether the question can be answered. Once they get past that point, the reaction of the clients is: Isn't this terrific – we have a much better grasp on whether or not our subject has been dealt with in the literature. They have also found the printout informative, sometimes eliminating the need to go to all the source documents.

– Vantine

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We feel that it has really been a pleasure to have online search, and I think that we are riding the wave of the immediate future. There are several things that we feel are benefits, one of them being the improvement in community relations: we have a bigger audience than we had before and we are attracting different types of people.

As far as reference use is concerned, I think that we are finding that it is improving now that there are the added bases and we are using the service more. We are now able to answer requests for information that we could not have answered without online search.

– Thomas

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Initially, library image is enhanced through online searching as patron identifies library with current information retrieval techniques. In the long run, however, online search results consistently must exceed those of manual searches in appropriate citations retrieved for the library image to benefit from new technology.

– Kendig*

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I really don't think that our having DIALOG in the library changes our image. The patrons who need a search find us, use us, and walk out the door. If they need reprints of an article, then they are back in the same groove of using everyday library services. Our having the capabilities of computerized searching does not affect their perception of a library. It is just a service they need and want and it happens to be at our library. If DIALOG were in a drug or grocery store, as copy machines are, it wouldn't change the way patrons think about or use those stores.

– McEwen*

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I feel that online searching is a very positive influence on the library image. The service brings in a number of people, especially business people, who might not normally use the library.

— Parker*

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Online searching has not changed the library's image to any great degree. The availability of the service has favorably impressed those who have used it, but these people are such a small percentage of total library users that the overall library image remains unchanged. The average library patron may display mild interest in the terminal, especially when it is being operated. But the system must be used to be appreciated. Since the average library patron does not use the service, it does not affect him or his view of the library.

— Johnson*

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B.2.2 Effect of Online Search on Allocation of Library Resources

Lessons learned: A library should ask several basic questions before adding online search service:

- Is there a real, not imagined, need for it? How does the service fit into the overall objectives of the library?
- Does the library have the necessary financial resources, time, personnel requirements to develop this service?
- Will this service produce better results than an alternative source (cost factors versus performance factors)?
- Will this service contribute substantially to meeting library objectives?

— Landtroop

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The most important comment I would make to anyone contemplating the initiation of online search is that it does take a considerable amount of staff time. The time required for training, workshops, and searching has had a considerable impact on the entire staff.

This leads to the larger question of how online search fits into the overall goals of the library. As in many other projects, I didn't realize when we started out all that was involved, but as we continued, I began to see that there are questions that have to be answered. The more staff time we put into online search, the less time we have for other services. The question of which community to serve then arises: are we to serve a sophisticated, highly educated community, or are we to serve the community that has no interest in this specialized reference service, but has other interests and needs that we are unable to fulfill. We are going to have to come to grips with this problem. I believe we have to be flexible enough to include both; but, we may have to require the users of online search to pay for the full service, i.e., including terminal cost and staff time so that the service does not become a burden on the library system.

— Thompson

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Overall, we are finding that online search requires a lot of effort — publicity, training — just to keep things going. It is not something that we can subscribe to and let sit around until we feel like using it — like a new reference book. Each library (public and otherwise) will have to decide whether it is worth the effort.

— DeWath

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We have discussed in our library the possibility of eliminating some data bases in paper copy because they are online. However, I do not think that that is a good way to look at the problem, because if the online service is no longer available for one reason or another, then one has no backup in hard copy. Data base availability implies that we don't have to keep duplicate copies of materials, and that we can also go into microfiche to obtain an enormous saving in shelf space (we could save 200 to 300 linear feet of shelf space by doing this). We could also save the binding cost, particularly for references that are only checked occasionally with online searches. We can have available data bases that we could not afford to buy in paper, and it broadens our entire scope of data retrieval.

— Vantine

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We have faced this resource question before. A lot of the paper sources that we subscribe to are very expensive, and at the present time we do provide very expensive business services for a limited audience. If you look at the people who are sitting at the business table, you will see the same persons being served over and over again.

– Thomas

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With a library as understaffed as ours, diverting staff to do online searching does affect other library services. This is further compounded because the type of person who makes an effective DIALOG operator is the type of person who is also a very capable librarian. So the best librarians are drafted as DIALOG operators. Their DIALOG duties give them less time to devote to the traditional public library duties. The other staff members must shoulder this extra load, if possible. The effect of diverting staff to online searching often results in a slight decrease in the quality of traditional library services. Libraries with a chronic staff shortage may be unable to offer online searching in addition to their traditional library services.

– Johnson*

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Diversion of staff from general reference to DIALOG searching may decrease overall level of library reference service at peak demand periods. DIALOG searchers who are also reference librarians should be scheduled to do searches during slack reference hours.

– Kendig*

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Naturally, online searching requires a commitment from the library management. The major change would be in allotting staff to the project. Extra thesauri and such materials are needed, of course, but the cost here is minimal compared to librarians' time. Of the 20 librarians working in the main library at public service desks, 4 of us have been trained to use DIALOG. Over the past few months, we have probably run between 30 to 40 searches each month. Adding in the time required to explain the system, make appointments, and the related duties of notifying them when printout arrives, etc., let's say 50 hours a month are now spent on DIALOG. This amounts to roughly 12-1/2 hours a week out of 800 a week for all librarians (20 × 40 hrs/wk) – hardly a major commitment.

– McEwen*

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B.2.3 Fee and Free Service

Our major hurdle was the decision to charge fees in a public library. It was decided that the library would absorb the staff time, connect time, and overhead; the terminal would be paid by NSF; and the DIALOG cost would be paid by the patron. If we did not charge the patron the DIALOG cost, we would not be able to offer the service. We have had no requests for refunds or defaults by our DIALOG users.

— Sakai

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The fee service has not presented as many problems as we had feared. If anyone objected to the public library selling a service, they didn't do so to our faces. We have had no problem that I know of with patrons failing to pay a balance due, bounding checks, etc. We have a checks-only provision that works well for us. I'm sure that users would like it better if we accepted cash and credit cards, but no one has been terribly inconvenienced (although a couple of times staff members have written checks on their own accounts for people who showed up with cash only). We do feel the pressure of having to search economically when spending the patron's money; beginning searchers find that particularly discomforting. They have dealt with that by practicing a search on demo and then doing it "for real" as a standard search — a luxury that we may not be able to afford in the future. The standard search promises some relief in that situation. When we are more confident (with ourselves or the subject of the search), we prefer custom, so that we can get the benefit of our efficiency. The problem, I think, stems from the strangeness of having someone else, in essence, pay for our time. I have worked other places where our time was billed to clients (not libraries but consulting organizations). After a little initial discomfort, staff members learned to accept the idea that whatever time we spent was billable, that mistakes, false starts, and inefficiency were a part of any human activity.

If we did enough DIALOG searches, we would eventually realize that no search is flawless, and that the flailing around that we do sometimes is a legitimate part of the search.

— DeWath

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We have had a number of people in library systems around the Twin Cities inquire as to nonfee use of the terminal. Up to the present, we have limited use to fee-paying INFORM clients. In 1977 a pilot study of free online searching for the general patron will be undertaken. The subject librarians will be responsible for determining whether a terminal search is the most cost-effective way of answering a question. We are finding that the average search cost runs $20 to $25 for a client, not including our INFORM librarian fee. (We have had searches ranging from $5 to several hundred dollars.) It is such a reasonable price that I feel that online searching is a tool that should be available in libraries everywhere.

– Vantine

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With reference to our use of DIALOG to answer reference questions, I continually worried about the fairness of charging some patrons and not charging others. The criterion sometimes mentioned as the appropriate guide – use online search only "to save time" – is not workable in actual practice. I found myself looking at the patron's address to get an idea as to whether he or she could afford online search. This affected my decision as to whether a full online search was recommended or not.

– Thomas

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We are concerned more than the public about charging a fee for searches. The public seems to be able to separate the online service from our free reference service. We are going to have to set up a fund, though, to handle the times when we use online search for our own reference questions and for bibliographic searches.

– Kristofferson

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Houston Public Library has a long history of doing indepth reference work for our patrons – for free. This includes, of course, literature searching. If these manual searches are successful, then electronic searching is not necessary. This approach (doing manual searching first) certainly does affect the use of DIALOG.

Houston Public Library has no difficulty at all in charging for patron use of online computer time. If a patron/client wants a literature search via computer, he will have to pay for it. A library does not have to have a "fee-based service" before they can have DIALOG, nor must they have DIALOG before they have a fee service.

— Landtroop

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Since most of our users are college students or in research, they have been glad to trade money for service. Everyone seems to be working with limited time, and the time saved is well worth the cost.

My question is how much of the service should be paid for by the taxpayer? At present time, the librarians' time is paid by the library. The patron pays for the connect time and printouts. We have had very few complaints from patrons who felt they didn't get their moneys worth. Most are thrilled with the results. Now should they be paying for the librarians time also? That's the difficult question.

Making rough generalizations, we now spend about an hour with each DIALOG patron and many times we spend this same amount of time on a telephone reference question, so I feel that the library is justified in offering this service without charging the patron for the librarian's time.

— McEwen*

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Although many librarians feel strongly that the public library should not offer a service for a fee, I do not agree. I feel that one way or the other the public is paying for the library. Since DIALOG attracts a very special clientele, willing to pay for the service, I feel that it is useful and desirable.

— Parker*

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The question of charging fees for selected public library services is an emotional issue. Although some librarians become indignant at the thought of charging any kind of fee for any kind of public library service, the DIALOG operators at our library feel no such qualms about charging a fee for online searching. The economic reality is such that there is no way that the city of San Jose would completely underwrite such a specialized service for a select few. As it is, the city is already subsidizing the service by not charging for library staff time or the use of the terminal. The library can and does offer online searching at a very reasonable cost, well within reach of all who need this type of service. There have been no complaints about the fact the library must charge a fee for this service. All who use it agree they received good value for their money.

– Johnson*

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B.2.4 Training and Allocation of Staff Using Online Search

Training Programs

I feel that the most beneficial training session would consist of two or three people at most with an experienced trainer some time after they have read the manuals. We are intelligent enough to absorb the basic idea of how the system works from the printed material; in the future it might be more valuable to read it first. At the training session one could discuss the finer points and have hands-on training.

There should be training beyond the initial 1- or 2-day session, preferably after the librarian has used the system for awhile. Advanced training should be offered on-location, since librarians find it hard to get away. It should occur once a year or maybe every 6 months. A minimum of three people should be trained to cover absence due to illness, job change, and differences in subject interest.

It was very difficult for us to become acquainted with the new data bases when we were not familiar with them in hard copy. For example, we were familiar with Foundation Center materials, so it was easy to use it in the online form. But when we dealt with Chemical Industry Notes or Oceanic Abstracts, which we weren't familiar with, we no longer were confident about what we were doing.

–Vantine

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My training as a DIALOG operator began 4 months into the fee period. The initial training was done by an experienced operator who explained the key commands and gave a demonstration on the terminal to illustrate their use. Although encouraged to use demo time to practice with DIALOG, this brief introduction did not give me enough confidence to do more than one or two practice searches.

About 3 weeks after the in-house training session, a Lockheed-sponsored workshop for novice DIALOG operators was given in Palo Alto. This workshop was very helpful. It presented a comprehensive review of basic DIALOG search commands and techniques, thus summarizing bits and pieces of key information given me by other operators or picked up on my own. In addition, there was a chance for hands-on practice with DIALOG terminals, which reinforced the information given earlier in the workshop. Although in-house training is useful, it is no substitute for a formalized practice session/workshop.

Shortly after attending this workshop, I began doing fee searches. I did very few demo searches for practice. In contrast to other operators who began doing fee searches after some months of practice during the nonfee period, I was doing fee searches with very little prior experience. As a result, my first fee searches were rather poor. Errors were made in typing, command syntax, and search logic. These searches took twice as long to do as comparable searches done by experienced operators. I had trouble keeping track of the commands given and sets manipulated earlier in the search, and often had to go back and retrace previous steps. The fact that my inexperience was costing the DIALOG patron money only served to increase my nervousness and unease during those first fee searches.

Nevertheless, I was learning. After a dozen fee searches, my search time dropped while my confidence and effectiveness rose. Soon, being a DIALOG operator became an enjoyable occupation and has remained so ever since.

Becoming a DIALOG operator in the middle of the fee period was not easy. Despite training sessions and demo time available for DIALOG practice, DIALOG proficiency can be gained only by doing patron-initiated searches. I just regret that those patrons for whom I did my first fee searches had to unknowingly subsidize my DIALOG education.

– Johnson

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Since I knew nothing about computers or set theory, I didn't have the foggiest idea of what was going on initially. I felt that I didn't have enough time to train on the terminals. Another training session that came 1 month to 6 weeks later was of some value, but we should have had another followup a month after that. When we went to the workshop in May 1975, almost at the end of the free period, we learned about things that we had never heard about before (stacking, for example).

– Holtby

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One of the major problems that I foresee for our continued use of online search is that of not having enough searches to keep our skills current. We have seen how rapidly we get rusty, and how difficult it is to pick up on new bases if we have no pressing need to use them. It is also likely that the money for training and for practicing online will be cut down or eliminated from the budget. But, they are essential in order to keep us even modestly competent, especially with new bases and search features being added all the time.

– DeWath

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My only comment is that there isn't enough hands-on time. A great deal of information is given in lecture form and with slides, etc., but there is nothing like facing a real problem and trying to figure out how to best approach it with a trained person on hand to correct your strategy. That is the way I learn best.

– McEwen*

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I was not pleased with my 1-day introductory training given by Lockheed. This was not due to the instructor; rather, I feel that a different approach is required. Specifically, there were 20 people and only 3 terminals available for the training session.

Unfortunately, some of the attendees with prior experience in DIALOG took over the terminals to search their work-related questions, leaving little time for the rest of us to obtain online practice. I believe a better format would allow each participant a fixed amount of time on the terminal with a given problem to search and solve.

I have been running searches since February 1977. It took about ten or twelve searches before I felt really comfortable on the terminal. I am still not comfortable in certain data bases. I wish that in the training sessions there was some discussion of the different data bases without the presumption that, as librarians, we are familiar with all of them.

– Parker*

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Staffing Arrangements

Staffing has been the biggest problem created by online search at San Jose. Since we did not add any extra staff for online search, we began to feel the strain as DIALOG requests increased from San Jose State University students. Fortunately, we had help from a SJSU library school student who received units for her work. Linda Erickson helped us through our busy free period.

During the period when fees were charged, the four operators were able to handle about 50 requests a month comfortably. Each of the operators specialized in a couple of data bases, assigned according to the operator's strengths. However, we conduct most of our searches in ERIC, a result of our high student usage.

I think it would be better to have a staff member assigned full time to do all the searches. That person would be able to study and receive advanced training in each data base and thereby do more skilled searching. Online search service takes time. For every minute online, an operator spends 3 minutes offline. This time does not include the numerous inquiries we receive. Staffing is a serious consideration in deciding to offer online search.

– Sakai

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We were never overwhelmed by the workload, but our staffing arrangements are more flexible than those of a library which must staff a reference desk. We did have some slight problems with distribution of requests among the staff. We leave requests in an in-box until someone picks them up to work on them. Occasionally a request would get bypassed (especially a messy one), with everyone thinking that someone else would do it – but that is more a function of our way of distributing workload, than anything directly related to online search. We have talked about assigning requests, either in strict rotation or according to different subjects, but the staff was unanimous in its feeling that the current procedure was preferable, both in terms of distributing the workload fairly and getting the searches done with the least delay.

We have avoided assigning specific bases to individual searchers, because that would mean a heavy load for people doing the popular bases, and could mean that a request would need to be done in a hurry without the "appropriate" person being available to do it. However, that would make it easier to keep up-to-date on changes in the bases.

– DeWath

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Since there are only 4 DIALOG operators, we do have to make appointments at least 24 hours or more in advance. We avoid Mondays because that is our busiest day. Sometimes, during our busy season, I do feel that online searching does detract from our overall reference service because we are stretched very thin from a staffing point of view.

– Parker*

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There are 4 DIALOG operators at this library (San Jose). That is a sufficient number to cope with the 30 to 40 searches done monthly. And it ensures that there is usually at least one trained operator available to answer questions about the service and set up appointments. If the number of monthly searches were to increase slightly, more operators would have to be trained. Not all librarians have the potential to be good DIALOG operators. The operator must be of above average intelligence, logical and flexible in thought, and capable of engaging in a man/machine DIALOG. These qualities do limit the number of potential operators even in a large library.

– Johnson*

Number of Operators

From the user's point of view, I suggest that a single operator be utilized. A single operator can become a specialist; he gains more expertise by doing more searches. This system is preferable to spreading out the searches among many operators.

— McEwen

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It is important that there not be too many operators because then you have a lot of people who have only a surface knowledge of how to perform searches. On the other hand, one operator does not work out well in a public library situation. It is difficult for one person to cover many subject areas, and from a staffing point of view, it doesn't work out well due to illness, vacation, etc.

— Kristofferson

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Staff Attitude and Ability

The key to a successful online search operation is the staff. If the people who will be working with it are not enthusiastic, the use of online search service anywhere is almost guaranteed to fail. The patrons know of online search only through us, so if we are skeptical or reluctant, or not interested in the patron's question, the patron will pick that up. If we aren't convinced of its value, we can't sell the patron on it; but, on the other hand, if we seem confident that we have gotten from DIALOG the best it can provide, however much or little, the patron is confident that the search has been as successful as possible.

— DeWath

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The attitude of the staff and administration must be supportive when a library decides to offer online search. Many of our early problems intensified because of a poor attitude. As our attitudes changed, the problems with fees, workload, and terminal/computer became manageable. It's because of this positive, supportive attitude of the operators and of administration that DIALOG will continue for a third year at San Jose Public Library.

– Sakai

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I believe all the operators feel as enthusiastic as I do about DIALOG. It's a fantastic tool and we are very fortunate to have it. Abilities vary and we each have certain data bases that we are more comfortable with, but, in general, I feel any of the operators can handle any of the questions. It's good to have more than one person involved so that if a problem does come up, you have someone else to help work it out.

– McEwen*

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Another problem is the relation between DIALOG operators and nonoperators. Most of the staff not connected with DIALOG have only a vague idea of what online searching is about. They are ignorant of what DIALOG can and cannot do. This is understandable since one must work with the system over a period of time before one can fully grasp its capabilities. But it does create situations where nonoperators make statements about DIALOG to patrons which are untrue and which DIALOG operators must later refute. Some type of education about DIALOG for nonoperators is needed. Also there is some resentment among the library staff toward operators whose appointment with a DIALOG patron runs over the allotted hour and who is subsequently late in relieving another librarian at a public desk. Some staff are annoyed when they must cover for operators who must attend to DIALOG-related business. To be sure, this type of resentment is not overwhelming, but it is present.

– Johnson*

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Interlibrary Cooperation

An alternative to the kind of arrangement that we have now is one in which one library acts as a central search facility for a large number of libraries, in a more formal arrangement than we now have in CIN. We have had so little participation from special libraries in CIN that I suspect that they never learned enough about DIALOG and/or the DIALIB project. Including a larger area, especially San Francisco, would probably increase the use tremendously. The question would arise, how would the cost be shared, particularly the staff costs. In the East Bay, the public libraries are trying an arrangement whereby online search requests are sent to U.C. It will be interesting to see how that works out, especially since the public librarians have been given no special training regarding the kinds of requests that are appropriate.

– DeWath

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Aside from a few requests from some special libraries, we haven't been in direct contact with other libraries re DIALOG. Other libraries do send patrons to us but there hasn't been a marked increase or decrease in interlibrary cooperation because of DIALOG.

– McEwen*

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B.2.5 Use of DIALOG for Reference

Reference Use

Online searching opens up a new vista for the smaller library as well as the research library. It provides the small library with capabilities that they never had before and enables them to provide better service to the public. I would recommend online searching to any library that can afford it, no matter how small the library. I feel that it is a tool that can enhance their collection immeasurably.

Interlibrary loan and other networking situations make it possible for people to get copies of needed materials at little or no cost. This means that online bibliographic searching enables the person having access to a very small collection to find out what is available and begin to do a really decent literature search. It may take them a little longer to obtain source materials that aren't immediately available, but it is well worth it.

– Vantine

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The ability to do full-text searching has made it relatively easy to verify a bibliographic citation when only limited information is supplied by the patron. The "hit" rate for such searches is high which means, that a special collection like Municipal Reference has an additional tool in helping a sometimes demanding clientele.

– Luchessi*

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DIALOG was used for more than patron-initiated searches. We, as librarians, became interested in the possible uses of an information retrieval system in daily public library reference work, e.g., bibliographic verification and searching for a specific answer. More time is needed to determine whether a system such as DIALOG is a useful reference tool. It is unfortunate that there is no current study being conducted on this aspect.

We tried using DIALOG in our reference work. That is, we used it to find a specific answer to a subject query. It was used to save staff time in searching indices and/or making available specialized indices. Our "hit" rate, was about 25%. It was hoped that the full-text capability of DIALOG would zero in on the specific topic. We need to do more reference searches on DIALOG before any decision can be made about its usefulness in public library reference.

– Sakai

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Five of us received a 1-day DIALOG training session at the library in August. After the training session, we practiced diligently for a while and talked with our friends here in the Twin Cities who had the system, trying to find out how to best use the system.

Originally we limited online searches to those that we knew would be successful, i.e., those that we could plan a strategy for, and for which there was a data base we knew had the material. We did not do much in September and October because none of the INFORM questions seemed suitable for online search. However, our searches in November indicated that there was a great deal of information in the bases which could be retrieved once we became more base oriented.

Because of a newspaper article in September describing INFORM and our online search capabilities, the request for our service increased quite a bit. People were interested to see what the computer could do for them. As the number of searches on the system increased, our proficiency increased; we used the logic more effectively, truncated more efficiently, and began to understand the peculiarities of each data base better. Our searching results then began to show a noticeable improvement.

As DIALOG added new bases such as Science Citation Index and Dissertation Abstracts, we were able to do searches that we had not been able to do previously, and we developed additional skills for Chem Abstracts and for NTIS which have been most helpful.

We feel that DIALOG enhanced the service that we provide our paying clients manyfold. It has provided an efficient, interesting, and informative backup service to the kinds of research that we already do. It has also enabled us to handle questions that formerly we would have had to subcontract because of a lack of sufficient resources.

– Vantine

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DIALOG is an adequate tool for the solution of reference questions which can be answered through compilation of bibliographies. DIALOG is less useful for ready reference type questions which are generally answered with one or two word factual replies.

– Kendig*

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I feel that there is quite an opportunity for using DIALOG to search reference questions online. The problem here is the cost. I do not foresee that we will be able to do this in the near future.

– Parker*

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DIALOG has been used very little in answering reference questions originating within the library. There are many types of reference questions for which DIALOG is of no or little help (i.e., trivia, legal, auto repair). There is some money to spend on computerized literature searching for in-house reference questions. Most of the materials found in such a search would be unavailable at our library and would have to be gotten elsewhere. Librarians are reluctant to suggest DIALOG as an alternative to a patron in the library searching for information. Perhaps this is because DIALOG is a fee service. Most of our online searches are initiated by patrons from outside the library who know of the service and ask for it specifically, and not by librarians working on in-house reference questions. There is a good potential for using DIALOG for such questions, but the lack of money appropriated for such a purpose is the key negative factor.

– Johnson*

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Data Bases

We find NTIS most valuable – it provides us with information that gives us good leads to other sources. We have found it a fast, efficient base to search, and we've had excellent results. We're gaining more experience in CAIN and like that base very much also.

Psych Abstracts has also been invaluable. It is a difficult base to search manually and we can find a great deal of material online that would not be cost effective to obtain by manual search. We had never realized the wealth of material in Psych Abstracts until we used it in the online form. The Foundation data bases have been of great use to our Sociology Department which is a regional repository for these materials as well as to INFORM.

The one frustration we have had in using the system is that Food Technology Abstracts is not online in DIALOG. It is something we use constantly and it is very cumbersome to use manually. There are so many cross checks that have to be done that we would really appreciate having online access. If Food Technology Abstracts had been online we would have easily doubled the number of searches during the trial period.

– Vantine

†††††

DIALOG provides several files which are useful for urban research. The most pertinent is probably NTIS which, with its strong base of government-sponsored research, covers many areas of interest to municipal managers. In recent months, for example, San Jose Municipal Reference Library has conducted searches in NTIS for city staff on such subjects as computer design of sewer systems, pedestrian safety, urban goods transportation, bus transportation, energy conservation in buildings, and health needs assessment. The results of our searches in NTIS have generally been very good, and the flexibility of search techniques has greatly simplified access to that body of report literature. Other files, such as Compendex or ABI, which focus on certain aspects of public works, personnel management, administration, finance, and the like, are also valuable in supporting an urban affairs reference service.

— Luchessi

†††††

Our biggest problem is not having information about the data bases. Data bases have been added and we have not received instructional material until several months afterward. We have not had specific training in the use of most data bases. Predicasts was on for a year before we learned how to operate it. There are some new bases online for which we may be using the wrong techniques because we are basing our approach on the brief blurb that was in the Chronolog.

— Doudell

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The number of data bases keeps expanding. There is no possibility of part-time searchers mastering them all. There are many subject areas which can be searched, but most of the searches done at this library are in either ERIC or Psych. Many of the data bases have never been searched, and may be searched very rarely in the future. Nevertheless, it is good to know they are there.

— Johnson*

†††††

As has been the case ever since we started using DIALOG, most of our searches have been in ERIC due to the San Jose State University students. I would say that we use 10 data bases 99% of the time. It's nice to have the large number (now up to 60) to choose from, but it will take more publicity before we would have customers for many of them.

— McEwen*

I view DIALOG as a relevant adjunct to good library service as it offers comprehensive and up-to-date coverage in many necessary fields. Some bases are a bit esoteric for general public usage but their availability is a comfort.

General problems regarding DIALOG I would like to see rectified are: (1) standardization of formats for bases since much time is spent "figuring out" how a new base works (by new base I mean one that I have not previously used or one that I have used infrequently and need refreshing before using again); (2) I feel that the addition of bases more attuned to public library needs would be most useful, e.g., the Wilson publications; (3) in view of the aforementioned (see number 1) it would be most helpful if "free" time were still available – even if on a very limited basis.

It would be helpful if more thesauri were available for pre-search screening of subject areas. We are forced to suppose that the client is adept or an expert in the field(s) related to their particular search. Usually their input is adequate to their needs but how often, we ask ourselves, could a better search have been conducted if a thesaurus were handily nearby.

– Smith*

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Presence of Patrons During Search

One point that should be emphasized is the importance of performing searches with the patron in attendance. From our experience it works much better; one knows exactly what the patron wants.

– Kristofferson

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I think that it is essential that the patron attend the search session. I had only one search where the patron wasn't present, and I felt very uncomfortable performing the search. The success of the search is really dependent on the patron being there to negotiate search strategy when results are insufficient.

– Parker*

†††††

Personally, I prefer to have the patron present while conducting his search. If the patron is present when the operator is online he has a much better idea of how online searching works, and why he got the results that he did. Also, if snags develop during the online search, if the search strategy is not getting the desired results, the patron is there to help the operator decide whether to drop the search or try a different approach. The operator is not a subject specialist, and may need guidance from a patron in the middle of a search. Most of the searches where the patron has been less satisfied with the results were searches done without the patron being present.

– Johnson*

†††††

This is to be recommended. It is more satisfying to the customer and certainly makes it easier on the operator. If too many citations appear, the patron can choose to see all or some of them. It keeps us from worrying about whether we are getting too much material for him or not enough. Besides, when he is there and sees how the combinations are put together, he seems to get a better grasp of how DIALOG works than if we just hand him the search results.

– McEwen*

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Location of Terminal as Factor in Use

We are one library in a group of 13 county libraries. Although we have sent these libraries promotional material, we have not been receiving many questions from them. Most people who have come in for searches have contacted us directly or are people who regularly use our library. The fact that the computer terminal is not physically present at these other libraries seems to make a difference.

– Doudell

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I believe that the patron is more attracted to online search if the terminal is located in his local branch. We were surprised that when we mentioned the possibility of using the more expensive TWX for the third year, we had some patrons who immediately volunteered that they were willing to pay the extra cost rather than go to a more distant library.

— Thomas

†††††

The location of the terminal has little effect on its use. There have been hardly any searches generated because a patron wandering through the library saw the terminal, read the signs and brochures, and decided this was exactly what he needed. The majority of searches originate with people who already know the library has this service and call in to make an appointment.

— Johnson*

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Doesn't appear to have any effect. The fact that it's in a public area generates some interest — but rarely does it bring us a new customer.

— McEwen*

†††††

Use of Offline Printing

We rarely use offline printing. We feel that the 3 or 4 days of waiting for a printout is a detriment for most of our questions. We use offline printing only when we have long-term projects or when the person indicates they really do not have immediate deadlines. Three or 4 days is too long if your are interested in a business question. The businessman generally waits too long to ask the question, and he must have his answers as rapidly as possible.

— Vantine

†††††

Reliability of Service

Tymshare and Telenet give us more reliability problems than DIALOG does. We have only been inconvenienced once by a DIALOG crash; the other times we have had a connection problem. In general, we have had very good service indeed.

— Vantine

†††††

On the whole, the reliability of DIALOG service has been quite good. But when the computer does go down, everything comes to a halt and this does create a problem. It is embarrassing to sit down before the terminal with an eager patron, confidently dial up the computer and not get an answer because of some computer bug. Worse still is when an operator is in the middle of a complex search and the computer goes down. The operator has no idea how long it is going to be before the computer is fixed. Should the operator encourage the patron to wait a few minutes, make another appointment, or offer to do the search himself later that day when the computer is back up but the patron has left? The people at Lockheed are of little help. When called about the length of the delay, they are often vague or overly optimistic. DIALOG is a marvelous system, when it is working.

– Johnson*

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The incidence of downtime has been very small this year. Also, we have had a few busy signals. All in all – service this year has been great.

– McEwen*

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Importance of the Service

Computerized literature searching is the move of the future. For speed and comprehensiveness, it cannot be compared to manual literature searching. The future promises more data bases, and increased price competition between rival data base vendors. Online searching should be offered at all academic libraries. It should be offered at those public libraries whose administrators make a firm commitment to provide adequate staffing. To me, online searching has been both educational and enjoyable, and I hope to continue to be involved with it.

– Johnson*

†††††

Libraries are going to have to get into online search. The schools are producing machine-oriented individuals, and people are well aware of how one can get at information through the use of the computer. There are going to be more and more people in the public who are not academically or business connected who are after specialized information that they expect to get from libraries.

In summary, the online terminal was a much appreciated service. In the near future it will necessarily be more or less self-supporting; we hope that we can draw together some statistics that will help make this possible.

– Thomas

†††††

I would like to emphatically state that DIALOG, while it has its peculiarities and problems, is a positive approach and a most welcome addition to libraries.

– Smith*

†††††

B.2.6 Need for Publicity to Promote Use of Online Search

Publicity to Library Staff

It is important to establish a base of support within the library by running training sessions for librarians who might forward questions to the search center. It is important that staff members not feel left out. They should not regard the online search system as a special tool closed to them, but as something that has practical application for every reference librarian.

We had 10 or 12 introductory sessions for staff members of any level who were interested, from the janitors right up to the director. We had a total of 60 or 70 people who attended, out of a staff of 220. I explained the online system to them and how it is used, and we ran demonstration searches. Each department was asked if there was a professional staff member who was interested in online searching. About 12 librarians were then trained more intensively on how one sets up a search strategy and were given time to practice on the terminal. Some of these persons have practiced and some have not.

– Vantine

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Publicity to patrons is more important than publicity to library staff on other libraries. Library staff should be familiar with the service, but main publicity effort should go toward introducing library patrons to the new service.

– Kendig*

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Regarding guidelines for public libraries considering online service, I would emphasize making librarians familiar and comfortable with the service through demonstrations in small groups and in familiar subject areas. Once the librarians are enthusiastic (as most of them are after having seen successful demonstrations), likely search topics seem to flow in.

– Neufeld

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It should be pointed out that all of the staff members here have enough knowledge of online search to be able to answer patron questions about the system when the search staff is not available.

– Kristofferson

† † † † †

Publicity to Other Libraries

Branch librarians will also remain a problem forever more. They don't care enough to spend the time to learn enough to take the initiative in generating online search requests and will have to be relied on merely as a pipeline for users who have already decided that they want DIALOG searches. They simply have too many other things to worry about; DIALOG is too low a priority. Most, however, are willing to relay a request, now that they have tried it a few times and no one has bitten them.

– DeWath

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It may be that we should provide more information to the librarians in these other libraries so that they will have a better idea of what online search is and what it can supply. Although I don't operate the terminal, the little knowledge that I have is important in that it helps me answer questions about online search when I am at the reference desk. Those who are not familiar with online search can have an erroneous idea of what the true capabilities of the system are with respect to a given question.

– Thompson

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We feel that the time was not sufficient to make all librarians aware of the ways in which the program could be of service to them and to their users. We have not yet succeeded in reaching the entire potential clientele but think we will in time. I think the committee and the board are convinced the service is worthwhile. More spadework has to be done to remove objections of librarians to charging for services, and hesitation to suggest methods with which they are not familiar, but this too is easing with time.

– Neufeld

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Besides the newspaper article, we have done no outside publicizing of the online service other than at meetings such as the local SLA chapter, the American Law Librarians Association, and an American Marketing Association seminar on information retrieval. We have also discussed the service with librarians throughout this region. We try to make users aware that online service is necessary if you are really going to do a good job for most business and technical questions.

– Vantine

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Publicity to Patrons and the Community

We have not used handouts or other printed material for the public. However, we have taken the opportunity, whenever possible, of performing demonstrations for business people. When we receive an inquiry from corporations concerning the system, we try to arrange for a demonstration. There has been an increasing and continuing interest in what is available online. If we feel that an online search is relevant to a question, then we mention this to the client indicating the possible results of the search and the possible cost. In nine times out of ten, the client is interested in the computer search.

– Vantine

†††††

We had discouraged publicity because we didn't have the staff to handle more questions, but publicity is a chicken-and-egg situation: if you don't have the support for the staff, you can't publicize the service; but if you don't publicize the service, you don't get the demand and you can't get support for the staff. We may have to go through a bad period of pushing the service, contracting business, technical, and professional groups in order to build usage. Then, we can attempt to charge a fee to cover staff time. We have not publicized the way Redwood City has, and still the word has spread. About 50% of our searches are for business clientele, but there is going to have to be a lot more publicity if we want to promote DIALOG to reach all potential users.

– Thomas

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Publicity will remain a problem forever more. Most people don't need online searches frequently enough to qualify as repeat users. We'll always be trying to find and sell new users. Fewer users (fewer than during the free period) mean less word-of-mouth publicity, which still accounts for most of our business.

– DeWath

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We have some patrons who are computer experts who know exactly how the system will work and what they want when they come in. We have the opposite extreme of people who know nothing about computers and who are unsure as to how to express their requirements. We therefore spend a lot of time explaining how online search works and what is required, and we make this explanation over and over again. The examples in our handouts have not been thorough enough to give patrons an idea of what the steps are in formulating a search strategy. It would be nice if they could look at something before they come in. Usually we must pull out a search that we have already done to show them how the system works. Many times they still don't understand, making it difficult to produce a satisfactory search.

– Doudell

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There is no question that increased publicity would result in increased demands for DIALOG service. Some publicity was generated for the system when it was inaugurated, but now searches are the result of information spread by word-of-mouth or by college instructors to students. If a concerted effort were made to publicize the service among the business, scientific, and academic communities, the number of monthly searches could easily be doubled. But it is doubtful our staff could handle so heavy a DIALOG workload. That is why the staff has made no effort to spread the word about DIALOG. Our staff can barely manage the number of searches we are doing now without benefit of publicity.

– Johnson*

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B.2.7 Who Are the Users (and Nonusers)?

The users of DIALOG by this library (San Jose) are primarily students, with lesser usage by business and scientific/technical professionals. The number of students users is not surprising since the library is only four blocks from a large state university. It is common practice for some professors to tell their students to come here to do a computerized literature search for their thesis or term paper. Those who are not using the service are the traditional public library patrons. These people need information of a more general nature than can be found in DIALOG. The information in DIALOG is just too esoteric. If there were a data base equivalent to Reader's Guide available at reasonable cost, the average public library patron would find online literature searching more attractive.

– Johnson*

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The response from users has been favorable, that is, from those who have actually used it, but the majority of our users aren't interested. By favorable, however, I mean less than overwhelming – the world is not beating a path to our door. No doubt as more data bases are added DIALOG will appeal to more people, but it will still appeal mainly to scholars and researchers, and to people whose businesses are directly related to subjects covered by DIALOG. These are not the people who form the backbone of the public library, much as we like to believe that they are – few scholars and researchers think of the public library as a resource. We would like to change that, and DIALOG can help us to change that, but it is a long, slow change.

– DeWath

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We have worked with the Municipal Information Library to answer questions posed by the mayor and other city officials. There is active support from our city officials. They are aware that a tool is available to locate important information for their needs in a short time.

– Vantine

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There may be more referral from branches than we realize, since some of the patrons who call us directly may have been directed to us by their branch libraries.

– Thomas

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Our County Librarian, Barbara Campbell, felt that it was important to provide free search for the county departments since they provide certain services to us. We were disappointed in the degree of county interest. Only the Planning and Public Works Departments came to our demonstrations; there are still many departments that apparently have not discovered what we can provide through online search. Nevertheless, we have done a fair number of searches for Planning and Public Works and also for the Health Department.

– Thomas

†††††

We went to the County offices and gave a number of demonstrations. We haven't charged the County departments for any of the searches that we have run. However, we have not received the response that we thought we would have. We had looked to the County as one outside source of demand in the future, and we had thought that a demand would develop and that they might help with some funding in the future. This was a big disappointment to us.

– Holtby

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In my experience, users of the service are generally students working toward their masters or doctorates, or members of the business community who are having searches performed for work related purposes.

– Parker*

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At the end of the third year, I noticed that our library was getting a few more calls from members of the corporate community in our service area and fewer from outside the CIN network.

— McNabb*

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B.2.8 Other Topics

Use of a Portable and TWX Terminal

We were fortunate to have available a portable Texas Instruments terminal for the 3-year period. Although one reason for our participation in the DIALIB project was the use of TWX, we did not make too much use of this during the first year, very limited use during the second, and somewhat more frequent use during the third. With the portable terminal, we were able to visit 12 of the 14 Branch Libraries of San Mateo County Library and 6 of the 8 Public Libraries in the Peninsula Library System and give demonstrations. Demonstrations were given for County Government offices such as County Managers Office, Public Works, Planning, Agriculture, and Public Health and Welfare. The demonstrations with the publicity were thought to be a basis for attracting users; however, it did not work this way, as only a few requests were generated as a result of either. The exception was in the Public Health and Welfare Department; since there appeared to be a continuing use pattern, the departmental librarian received training and conducted the department's searches. We found using the portable terminal with County telephone tielines (it was a local call from Redwood City) frequently resulted in garbled page copy on the terminal; this made it difficult to read as well as to concentrate on the search pattern. During the third year, more use was made not of the TWX but of the microwave teletype and telephone lines dedicated to computer use. The difference in speed was noticeable, from 30 CPS to 10 CPS, but no garbling was noted; since the teletype was equipped with a tape attachment, tape copy of the search could be made and retransmitted to a Branch Library; this was done in several rush requests so the patron would know what to expect. When we were considering the TWX as the means of access, it was determined the charge would be 15¢ per minute; this charge would have to be added to cost of search to the patron; the library did make provision for covering the cost of TWX charges for the free and half-fee period, but during the full-fee period, the cost of TWX is added to patron charges. During the second year, 18 searches were made on TWX and 8 on the teletypewriter; the log for the third year does not indicate the number of searches done by teletypewriter. The use of the terminal was the option to reduce costs to the patron for search time. However, from the end of the third year, all the searches will be done on the TT.

– Scott*

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Mail Requests for Service

DIALOG requests were also facilitated by doing the entire transaction by mail. San Mateo County Library did this to a certain extent with requests from Stanislaus State and also from our branches (by a regular delivery service within our library system). After discussing with the patron the cost of service, what results could be expected, etc., forms were mailed to the patron, filled out by patron, and returned with the deposit. Requests were done as soon as possible and results mailed to patron. Another benefit of the mail transaction was the convenience to both parties and I believe it was more cost effective for the patron. It also gave the librarian a better opportunity to prepare search strategy, because a problem still with the DIALOG system was the increasing number of data bases added one right after the other, and in this period of time, with only 1 hour of demonstration time a month, there was very little online learning of idiosyncrasies of individual data bases.

– McNabb*

Appendix C

LIBRARY PARTICIPANTS IN THE STUDY

C.1 SAN MATEO COUNTY LIBRARY (3-YEAR PARTICIPATION)

- James W. Buckley, County Librarian
- Anna M. Scott, Reference Coordinator
- Nancy Lewis, Reference/Documents Librarian (transferred to another Division 5/75)
- Beth McNabb, Reference Librarian
- Joan P. Tobias, Reference/Documents Librarian (from 9/75 to date)
- Nancy DeWath, Reference Librarian (left project 5/76)
- Wayne Smith, Reference Librarian
- Nancy Crabbe, San Mateo County Dept of Public Health & Welfare Librarian
- Evelyn Helmer, Public Information Coordinator
- Dennis Nolan, Staff Artist

Mr. Buckley gave his approval for our participation and encouraged usage and demonstrations for County Branch Libraries, Peninsula Library System Libraries, and for County Government departments.

Ann Scott, Nancy Lewis, Nancy DeWath, and Beth McNabb were the first trained operators. Nancy DeWath did most of the work in developing forms, logs, and initial training of staff. All these reference librarians participated in demonstrations in libraries, at organizational meetings, and in County departments. Wayne Smith was the last librarian to receive training in the group of librarians on the staff at the beginning of the project.

Joan Tobias received the training after she reported to the Reference Division and has been a Dialog researcher ever since; she completed the Predicast special training course in December 1975.

Nancy Crabbe, librarian for a departmental library, was trained in DIALOG because she was a heavy user and this reduced the workload on the County Library Reference Staff.

Evelyn Helmer is the San Mateo County Library Public Information Coordinator and kept up a flow of publicity for San Mateo County Library. Dennis Nolan, staff artist, contributed ideas for local displays and publicity brochures which serve to attract attention.

All the people listed contributed time and effort in support of the project as well as the remainder of the Reference Division staff who had to cover while the Reference Librarians were at training sessions and demonstrations.

Anna M. Scott,
Reference Coordinator

C.2 REDWOOD CITY PUBLIC LIBRARY (2-YEAR PARTICIPATION)

First Year:	Sally Drew, Librarian III
	Thomas Kam, Librarian II
	Dolores King, Librarian I
	Alice Tabari, Librarian I
	Lucile Benedetti, Librarian I
Second Year:	Lisa H. Naef, Librarian III
	Thomas Kam, Librarian II
	Lucile Benedetti, Librarian II
	Susan Kaplan, Librarian I
	Linda Lindeen, Librarian I

Each of these persons acted as interviewer, search operator, and did the followup work with Dialog users.

In addition the Librarians III coordinated assignments, kept the account books, and made reports.

Lisa H. Naef
Head, Adult Reference and Readers' Advisory Services

C.3 SAN JOSE PUBLIC LIBRARY (3-YEAR PARTICIPATION)

- Beverly Chance, Office Supervisor, handled DIALOG invoice/billing
- Rose Crimi, Administrative Services Officer, established administrative procedure involving DIALOG
- Homer Fletcher, City Librarian, approved and supported DIALOG
- Bob Johnson, Reference Librarian, DIALOG operator
- Robin Kendig, Municipal Reference Librarian, DIALOG operator (3rd year)
- Charleen Kurotsuchi, Reference Librarian, DIALOG operator and DIALIB liaison
- Rob Luchessi, Reference Librarian, DIALOG operator
- Scotty McEwen, Reference Librarian, DIALOG operator
- Richard Rendler, Chief, Public Service, administrative liaison
- Charlotte Sakai, Reference Librarian, DIALOG operator and DIALIB liaison
- Phyllis Parker, Branch Liaison Librarian, DIALOG operator (3rd year)
- Katherine Devonshire, Typist Clerk, handled DIALOG printouts and statistics
- Dorotha Edwards, Typist Clerk, handled DIALOG printouts and statistics

Charlotte Sakai
DIALIB Liaison

C.4 SANTA CLARA COUNTY LIBRARY (CUPERTINO) (2-YEAR PARTICIPATION)

Credits are due to:

Barbara Campbell, Santa Clara County Librarian, for her agreement to allow participation in the NSF Study, providing space and allowing staff time as needed for planning, meetings, reports, workshops, and DIALOG demonstrations and searches as required throughout the project, and for her enthusiastic support of the investigation of a new dimension in library service.

Phyllis Levine, Supervisor of Adult Services, Santa Clara County Library, for her participation in the organizing and planning of the project as it operated in the Cupertino Library and elsewhere.

Lois Thomas, Reference Librarian, Santa Clara County Library, who, as head of the Research Center, managed the DIALOG program at Cupertino Library.

Allison Holtby, who has been Chief Reporter for the Cupertino operation as well as a DIALOG demonstrator and searcher, and whose ideas as well as time and effort contributed much to the program.

Charlotte Doudell, whose skill and previous knowledge of machine searching added a great plus to the project at Cupertino.

Eric Kristofferson, whose scientific background coupled with knowledge of automated retrieval systems promoted a high degree of expertise in the Cupertino program.

Dale Thompson, who, as Regional Librarian in charge of Cupertino Library, has constantly coped with adjusting schedules and workloads to permit DIALOG to operate smoothly for the benefit of patrons and the project.

Cheryl Mouton, now with Richmond Public Library, who enthusiastically participated in the early stages of the program at Cupertino, giving demonstrations and conducting searches.

Mary Ferber, now Order Librarian for Santa Clara County, who devoted time and energy to the Cupertino program in the first months of the project, giving demonstrations and conducting searches.

Lois Thomas
Head, Research Center

C.5 MINNEAPOLIS PUBLIC LIBRARY (INFORM) (6-MONTH PARTICIPATION)

- Joseph Kimbrough, Director
- Carol L. Vantine-INFORM Librarian
- Carol A. Helsing-INFORM Librarian (now with 3M Business Information Service)
- Amy E. Raedeke-INFORM Librarian

C.6 CLEVELAND PUBLIC LIBRARY (FACTS FOR A FEE) (6-MONTH PARTICIPATION)

- Ervin J. Gaines, Director
- Ethel L. Robinson, Head of Main Library
- Jean Davenport, Facts for a Fee Consultant

C.7 HOUSTON PUBLIC LIBRARY (6-MONTH PARTICIPATION)

- David M. Henington, Director
- Ann Landtroop, Head, Business, Science and Technology

C.8 LONG ISLAND LIBRARY RESOURCES COUNCIL (6-MONTH PARTICIPATION)

- David Wilder, Director
- Judith B. Neufeld, Assistant to the Director

C.9 TULSA CITY-COUNTY LIBRARY (INFO II) (3RD-YEAR PARTICIPATION)

- Linda Hill, Head, Business and Technology Department
- Jane Colwin, INFO II Research Librarian

Appendix D

PUBLICITY PLAN
AND SELECTED PUBLICITY MATERIALS

The publicity approach followed a four-stage approach, as described by our publicity consultant, Evelyn Helmer.*

- Stage One:

  Ribbon cutting ceremonies took place in the San Jose Public Library; news stories appeared in four daily newspapers and half dozen local weeklies (see Fig. D-1); there was some coverage on the news programs of local radio stations and one TV network covered the opening ceremonies. Brochures, bookmarks, and posters were designed primarily for distribution to public, school, special, industrial, and college libraries in Santa Clara and San Mateo Counties. Ultimately they included also Monterey and Santa Cruz Counties when they joined the Cooperative Information Network. These materials were reissued from time to time when opportunities for wider distribution were sought, i.e., at state and national library conventions, professional conferences, and meetings of technical and scientific organizations. It soon became apparent that publicity of a general nature needed to be supplemented by more specific descriptive flyers and brochures. (See Figs. D-2, D-3.)

- Stage Two:

  During this period, several hundred brochures and cover letters were mailed to scientific, technical, educational, and professional organizations, as well as to schools, a few businesses, and governmental departments primarily in the Santa Clara and San Mateo County and City jurisdictions. Invitations were sent to various groups encouraging them to ask for demonstrations. Reference librarians did on-the-spot searches for nearly two dozen groups as varied as the Coroner's Department, Kiwanis Club, and County Manager's Office.

  Perhaps the most difficult problem at this time was gauging the amount of publicity that should be released. Everyone wanted the project to succeed

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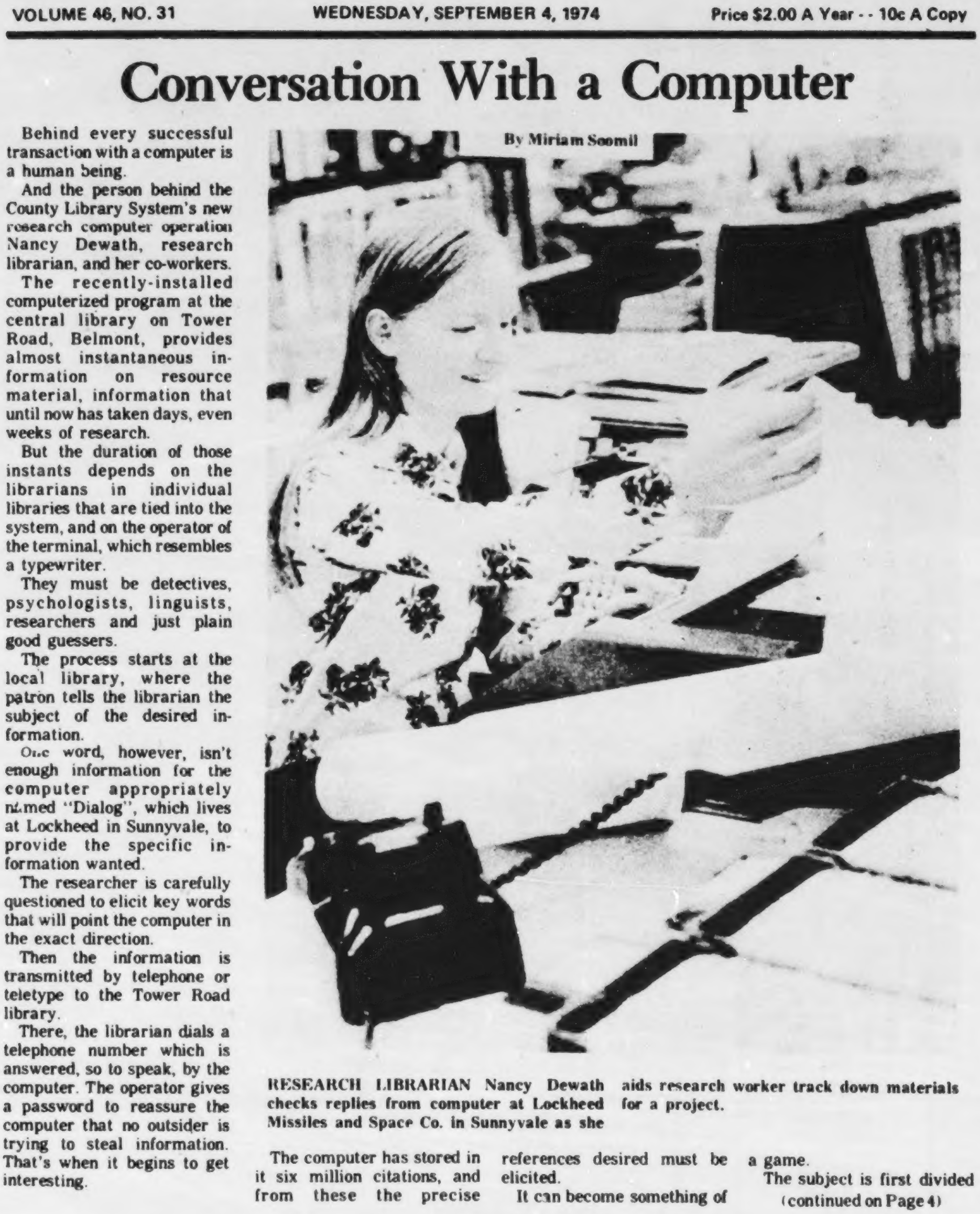
*It has been a challenge and an interesting two years serving the project as publicity coordinator. I am grateful for all the help given to me in my efforts to spread the word. Special thanks to Oscar Firschein, Ann Scott, Nancy DeWath, Beth McNabb, Salley, Drew, Lisa Naef, Lois Thomas, Charlotte Sakai, and staff artist, Dennis Nolan.



VOLUME 46, NO. 31 WEDNESDAY, SEPTEMBER 4, 1974 Price $2.00 A Year - - 10c A Copy

Conversation With a Computer

By Miriam Soomil

Behind every successful transaction with a computer is a human being.

And the person behind the County Library System's new research computer operation Nancy Dewath, research librarian, and her co-workers.

The recently-installed computerized program at the central library on Tower Road, Belmont, provides almost instantaneous information on resource material, information that until now has taken days, even weeks of research.

But the duration of those instants depends on the librarians in individual libraries that are tied into the system, and on the operator of the terminal, which resembles a typewriter.

They must be detectives, psychologists, linguists, researchers and just plain good guessers.

The process starts at the local library, where the patron tells the librarian the subject of the desired information.

One word, however, isn't enough information for the computer appropriately named "Dialog", which lives at Lockheed in Sunnyvale, to provide the specific information wanted.

The researcher is carefully questioned to elicit key words that will point the computer in the exact direction.

Then the information is transmitted by telephone or teletype to the Tower Road library.

There, the librarian dials a telephone number which is answered, so to speak, by the computer. The operator gives a password to reassure the computer that no outsider is trying to steal information. That's when it begins to get interesting.

RESEARCH LIBRARIAN Nancy Dewath checks replies from computer at Lockheed Missiles and Space Co. in Sunnyvale as she aids research worker track down materials for a project.

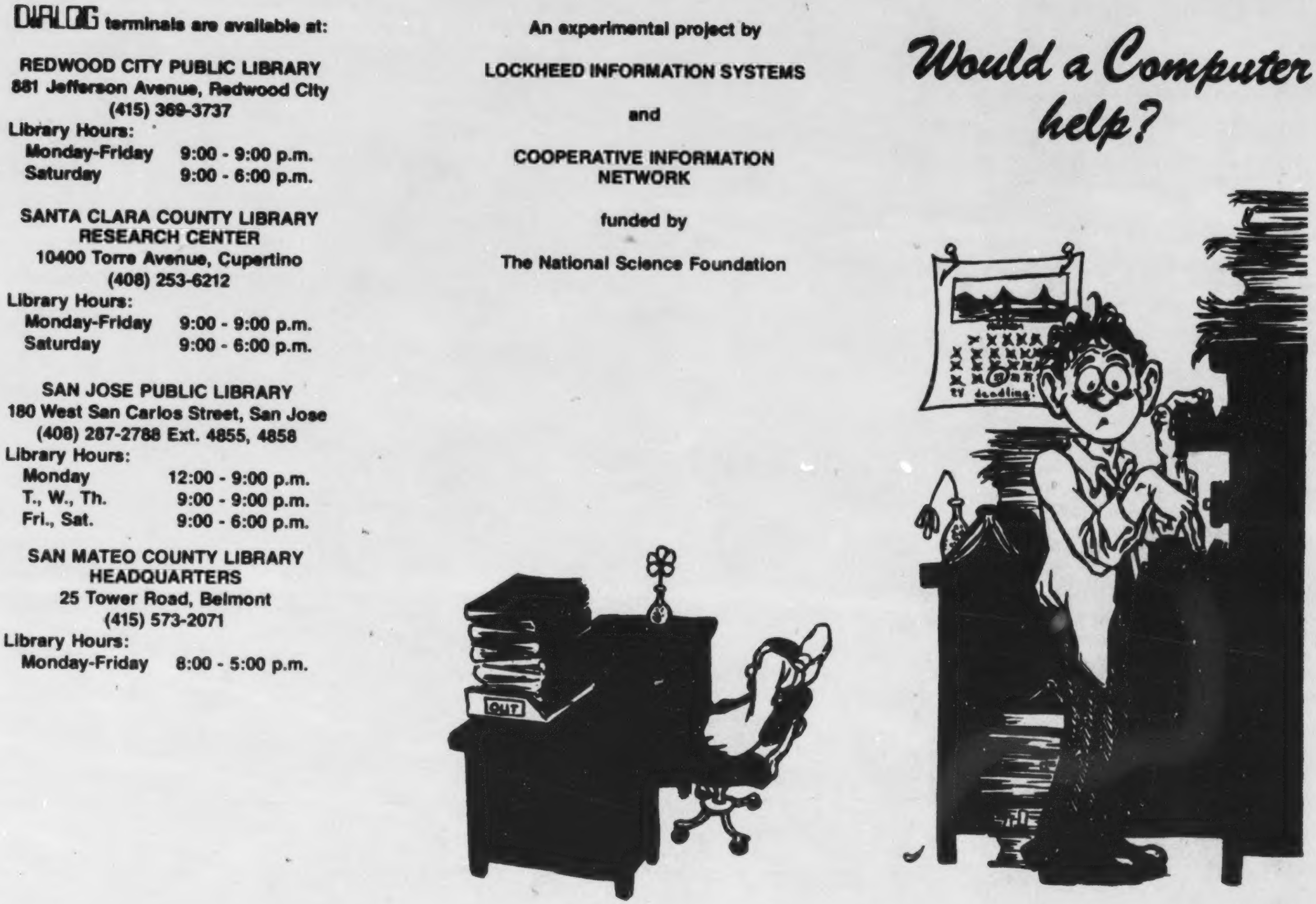
The computer has stored in it six million citations, and from these the precise references desired must be elicited.

It can become something of a game.

The subject is first divided

(continued on Page 4)

Fig. D-1 Typical Newspaper Coverage of the Project



DIALOG terminals are available at:

REDWOOD CITY PUBLIC LIBRARY
881 Jefferson Avenue, Redwood City
(415) 369-3737

Library Hours:

Monday-Friday	9:00 - 9:00 p.m.
Saturday	9:00 - 6:00 p.m.

SANTA CLARA COUNTY LIBRARY RESEARCH CENTER
10400 Torre Avenue, Cupertino
(408) 253-6212

Library Hours:

Monday-Friday	9:00 - 9:00 p.m.
Saturday	9:00 - 6:00 p.m.

SAN JOSE PUBLIC LIBRARY
180 West San Carlos Street, San Jose
(408) 287-2788 Ext. 4855, 4858

Library Hours:

Monday	12:00 - 9:00 p.m.
T., W., Th.	9:00 - 9:00 p.m.
Fri., Sat.	9:00 - 6:00 p.m.

SAN MATEO COUNTY LIBRARY HEADQUARTERS
25 Tower Road, Belmont
(415) 573-2071

Library Hours:

Monday-Friday	8:00 - 5:00 p.m.

An experimental project by

LOCKHEED INFORMATION SYSTEMS

and

COOPERATIVE INFORMATION NETWORK

funded by

The National Science Foundation

Would a Computer help?

Fig. D-2 Sample Brochure

Are you writing a paper on microbiology, linguistics or cat leukemia?

Do you administer an air conditioning and heating business?

Teaching a class of hyperkinetic children?

Interested in community services?

Perhaps you are writing a book: you've got a plot and the setting—now you need to enrich it with background data.

How about bee culture or plant nutrients?

Do you need to know more about management by objectives, affirmative action programs, the four-day, 40 hour work week?

Are you involved in your community's environmental impact studies?

We can find the current technical and scientific information you need, as well as data from the fields of education, psychology, agriculture, and the social sciences.

How may YOU obtain this information?

DIALOG an on-line information retrieval system, developed by Lockheed Information System, was made available to the libraries of the Cooperative Information Network (CIN) by a grant from the National Science Foundation.

The computer service provides quick access to millions of references in science, technology, social sciences, psychology, education, and agriculture.

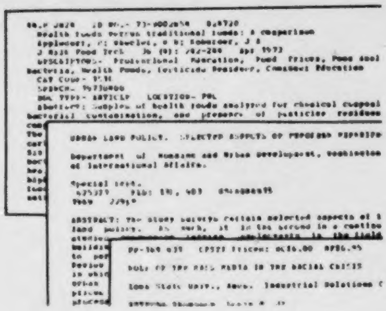
Although the computer terminals are located in just four public libraries in Santa Clara and San Mateo counties, the patrons of all the libraries in the Cooperative Information Network may receive the overwhelming amount of information that can be read and brought forth by the computer.

During the first year of the program, there will be no charge to the library patron; however, there will be a nominal charge after June 1, 1975.

Ask your local librarian about DIALOG or visit one of the libraries that has a computer terminal. See locations on the back.

Fig. D-2 Sample Brochure (Cont.)

Would a computer help?



a. Front

DIALOG

developed by the Lockheed Information Systems, is available to the Cooperative Information Network (CIN) Libraries.

Made possible by a grant from the National Science Foundation, this service provides quick access to millions of references in science, technology, social sciences, psychology, education, and agriculture.

Ask your local librarian about the services of DIALOG or visit one of the libraries that has a computer terminal.

REDWOOD CITY PUBLIC LIBRARY
881 Jefferson Avenue
Redwood City (415) 369-3737
Library Hours:
M-F 9:00-9:00 p.m.
Saturday 9:00-6:00 p.m.

SANTA CLARA COUNTY LIBRARY RESEARCH CENTER
(Cupertino)
10400 Torre Avenue
Cupertino (408) 253-6212
Library Hours:
M-F 9:00-9:00 p.m.
Saturday 9:00-6:00 p.m.

SAN JOSE PUBLIC LIBRARY
180 West San Carlos Street
San Jose (408) 287-2788
Ext. 4855, 4858
Library Hours:
Monday 12:00-9:00 p.m.
T, W, Th. 9:00-9:00 p.m.
Fri, Sat. 9:00-6:00 p.m.

SAN MATEO COUNTY LIBRARY HEADQUARTERS
25 Tower Road
Belmont (415) 573-2071
Library Hours:
M-F 8:00-5:00 p.m.

1974

b. Back

Fig. D-3 Sample Bookmark

and the requests to come in, but libraries were fearful of a flood of requests that would tax staff members who were already working at capacity. Efforts were made to ascertain the effects of each publicity release and the subsequent actions were tailored to fit the response whenever possible. Although there was never an overwhelming surge of interest from the public, all libraries felt they were receiving about as much demand as they could handle without extra staff help. We did not, therefore, step up the tempo of publicity, but rather kept a steady flow going out to the community – another newspaper article, a few radio spots, and some mailings to business.

- Stage Three:

This section of the plan was to have consisted of feature articles as follow up and major media presentations, on TV, perhaps. This did not materialize because there was concern that Bay Area wide publicity might result in a fall-out upon nonparticipating libraries unable to cope with the inquiries. However, a slide/tape presentation was produced that was used by some libraries and schools both as publicity for the project and staff orientation. The tape is 11 minutes in length and there are 80 slides. Ads were placed in the Redwood City Tribune on four separate days. They produced only two inquiries. No searches resulted.

- Stage Four:

Instead of wide-spread media coverage, we concentrated on posters with tear-off sheets for further information. We are still receiving a steady trickle of response from these, whereas the direct mailings elicited very little action. One direct, concentrated, and select mailing was directed at an upper middle class, primarily professional community of Ladera, located near Stanford. The community consists of more than 400 families. Materials were mailed to about 200 households to determine the response. Since only three individuals contacted the libraries for further information, we did not continue with the additional 200 mailings. Finally, mailings were sent to Santa Clara County government employees at the request of the Santa Clara County Library which made DIALOG searches available free of charge to County officials.

Appendix E

DIALOG INTERACTIVE INFORMATION RETRIEVAL SYSTEM

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DIALOG INTERACTIVE INFORMATION RETRIEVAL SYSTEM

by R. K. Summit

Reprinted from Encyclopedia of Library and Information Science

DIALOG INTERACTIVE INFORMATION RETRIEVAL SYSTEM

DIALOG is the name given to an interactive, computer-based information retrieval language developed at the Lockheed Palo Alto Research Laboratory. The DIALOG system consists of a series of computer programs which have been designed to make full use of direct access memory devices (in which data located anywhere on the device can be accessed in approximately the same amount of time) and video display units to provide the user a rapid and powerful means of identifying records within a file which satisfy a particular information need. By providing the user full display access to the indexing vocabulary, and the ability to modify search expressions, DIALOG becomes a data processing extension of the human operator who directs and controls the process according to his own personal needs. Figure 1 shows a DIALOG communications terminal which enables the user to communicate with the computer. The user issues commands to the computer by way of the keyboard, and he receives results on the display unit and/or on the teletype as appropriate. DIALOG allows the user with a well-defined search topic to proceed directly to desired records: the user who cannot so explicitly define his requirement is provided tools for browsing through the file. It is thus possible to investigate successive avenues of interest as they arise or are suggested by intermediate retrieval results.

The language procedures are easily learned, and the system has been used

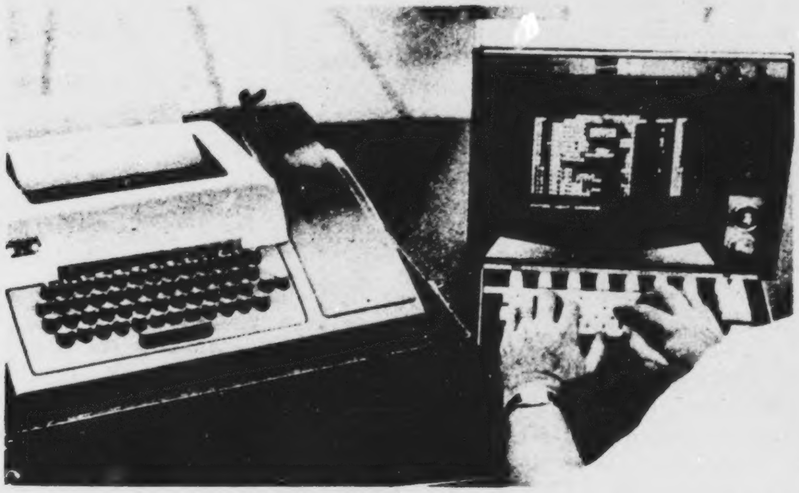

FIGURE 1. *DIALOG communications terminal.*

successfully by educators, working scientists, engineers, and librarians. To understand how such an information retrieval system operates, one should be aware of historical solutions to the problem of information retrieval and should have a general grasp of the techniques employed within a computer to accomplish on-line retrieval of information.

The central problem in information retrieval is to identify and obtain those documents from a collection that contain desired information. The magnitude of the problem becomes apparent when it is realized that many current technical collections require several miles of shelf space for storage. The user attempting to identify all documents that might discuss welding defects in aluminum or the use of molybdenum disulfide as a solid lubricant in spacecraft, for example, faces an almost insurmountable information retrieval problem.

The historical solution to this problem has been to create an index to the information collection. Indexes can take many forms. Back-of-the-book indexes assist the reader in finding which pages of a book discuss a particular topic. Library card catalogs are indexes that enable the library user to find information through several access points: subject, author, corporate source, report number, and other collective characteristics. Although useful, manual indexes are limited in several ways. The more specific the indexing, the larger the index becomes, and the harder it is to find particular topics of interest in the index. Consequently, manual indexes usually contain only relatively general subject headings which apply to large numbers of documents. As a result, after finding a general topic of interest, the user still must scan a sometimes burdensome amount of material to identify specific items of interest. Another limitation inherent in manual indexes is the inability to combine or coordinate index elements into comprehensive groups. If one wishes to find what Stanford University has produced on the subject of teaching mathematics in the elementary grades, for example, the user has no way of combining the source entry point, Stanford University, with the subject entry points of mathematics and elementary education. Furthermore, there may be several source entries for Stanford University.

Computer-based information retrieval systems can largely overcome many of the limitations of manual systems if properly designed. In most cases computer-based retrieval systems not only allow the user to combine several retrieval parameters, but they also provide relatively rapid results. There are two major categories of computer retrieval systems, each of which approaches the retrieval problem in a somewhat different manner: serial search systems and direct access systems.

Serial search systems were the first to appear and were widely used during the early 1960s. With this approach, the collection or data base to be searched is normally contained on magnetic tape in serial fashion. Each record represents a document and contains the information elements found on a library catalog card (e.g., title, author, source, subject headings). To perform a search, a user fills out a form in which he describes as nearly as possible his interest. This search request is then coded by a person familiar with the collection and entered into the computer (usually along with several other search requests). The computer is controlled by a relatively simple search program that causes it to read each successive record from magnetic tape, to compare the contents of the record with the elements specified in the search request, and then to copy the record out to a second magnetic tape if there has been a match, or to proceed to the next record. If the collection is large, it can take several hours for the computer to process the search requests. Furthermore, if the request has been too specific, the requestor is likely to get few if any results; if the specification has been too broad, the requestor can get several hundred citations printed out which he then must examine. Because the request had to be processed through an intermediary, there may have been further degradation in the quality of the results.

In direct access systems, indexes much like back-of-the-book indexes are constructed from the collection. For each index term or descriptor, the locations of all records in the collection containing that descriptor are listed on a direct access device. This index is commonly known as an inverted file. Whereas the book index indicates the locations of pages containing particular information, the inverted file indicates locations of records containing particular information. The main collection is also located on a direct access device. This file is commonly called the linear file. It is thus possible for the computer to look up a particular index term in the inverted file, to read off the list of locations or addresses for the citation records that contain the index term, and then to access directly the linear file for each location to copy the appropriate record—either to a display, as in the case of an on-line system, or to a printer, if this has been specified.

Whereas serial search systems can be efficiently operated only in a batch mode (i.e., each inquiry specifies the complete search process to be performed), direct access systems can be designed to be operated in either a batch or interactive mode (i.e., wherein the user can control and redirect the search process during execution). Typically, serial search systems are simpler and less costly to design but are more costly to operate than direct access systems. Direct access systems which provide for user interaction can typically produce higher quality results (i.e., a higher proportion of relevant results with fewer items missed).

Interactive systems can be further distinguished according to the rate and amount of information transferred during the search process. Systems designed for visual display terminals usually operate at relatively high speeds (120–240 characters per second) and transfer a larger amount of information but cost more to operate than teletype terminals, which operate at relatively slow speeds (10–15 characters per second).

It was decided from the outset that DIALOG was to provide maximum interaction between the user and the file. As a result, and even though relatively uneconomic at the time (1966), DIALOG was designed to include a terminal consisting of both a high-speed cathode ray tube display and an associated hard copy device (see Figure 1). From the user's point of view DIALOG consists of several plain English commands, such as DISPLAY, PRINT, and SELECT, which allow him to perform information retrieval functions. Commands are defined on the special characters above the numeric keys on the input keyboard so that a convenient command label

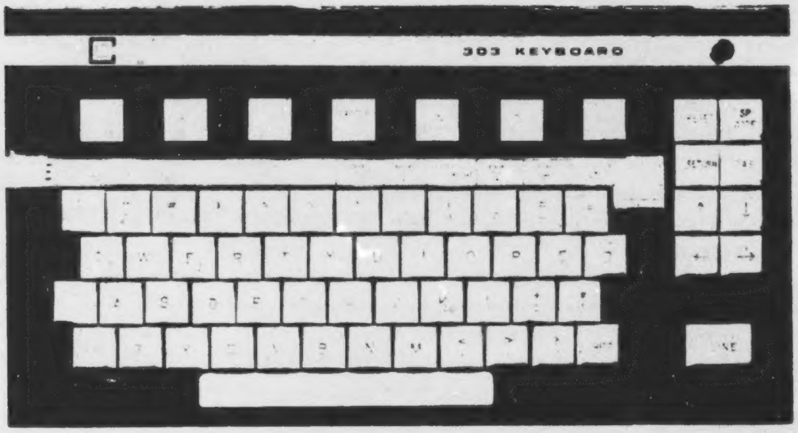

FIGURE 2. *DIALOG input keyboard with a command label strip.*

strip can be attached to the keyboard to identify the commands (see Figure 2). The commands are so designed that no prespecified sequence must be followed, i.e., the user is free to select any command he considers appropriate for the next step of the search. Consequently, the user completely controls the search process. At any point he can branch off the main path of his search to explore associated ideas suggested during the course of the search. The command key orientation results in a very simple clerical procedure: depress command key, key in operand data, press TRANS key to transfer the entire message to the computer. Corrections are made by backspacing and typing over incorrect characters. Following entry of each command, the system responds with information that assists the user in deciding the next step to take.

The final implication of the command orientation is that the search process is broken up into a sequence of small steps, each of which is very simple, and each of which results in feedback from the system. In this manner each step is completed correctly before proceeding, thus eliminating the need to reenter the entire search specification in case of an error, as must be done in batchtype systems.

In the context of these fundamental considerations, DIALOG design characteristics will be discussed with regard to six fundamental steps which are more or less followed in any retrieval process:

(1) Identify and select index terms which characterize the search interest.
(2) Coordinate individual terms into concept groups.
(3) Sample and evaluate intermediate search results.
(4) Modify (1) and/or (2) and redo (3).
(5) Output results.
(6) Review actual documents.

Machine implementation of each step will be compared with the historical solution in using the card catalog.

In using a card catalog, the searcher selects a generic noun or noun phrase related to his search interest and scans through the alphabetically arranged catalog entries looking for a match or a cross reference. If it is a large catalog, finding an acceptable entry can be time consuming. Most libraries do not provide a published catalog guide or index that would enable the searcher to identify subject headings of interest before approaching the card catalog.

In DIALOG, two commands, EXPAND and SELECT, are provided to assist the user in identifying and selecting desired index terms. One form of EXPAND provides a display of the alphabetically near index terms to the term entered together with an indication of the number of citations indexed by displayed terms, and also the number of cross reference or related terms associated with each displayed term. Figure 3 shows the display resulting from the command EXPAND "INTERACTION."[†] Each displayed term is numbered for easy reference. Another form of the EXPAND command allows the user to display the related terms in the same format as that just described (see Figure 4). The user is thus provided a window to the index and thesaurus to assist him in identifying useful index terms with which to characterize his search interest.

The SELECT command enables the user to construct a list of desired index terms for future reference. SELECT entries result in the definition of file subsets (referred to simply as sets) which are tagged with "set numbers" and are printed out on the terminal hard copy device.

The command, SELECT "COMPUTERS," for example, would result in the following output at the terminal:

Set No.	No. in set	Description of set (+=or,*=and, −=not)
1	558	COMPUTERS

Once selected, a term (or more exactly, the file subset associated with the term) may be referenced by its set number. Citations associated with any set can be displayed, printed, selectively saved, or combined with other sets. If a selected term cannot be found, an error message is printed out for the user who then can automatically display the alphabetically near terms by depressing the EXPAND key. Each term is thus validated at time of entry, and the frequency of term use is recorded for later reference.

The card catalog contains a static collection of precoordinated subject headings (at least in the short run). Someone other than the searcher had to decide a priori the appropriate categories to be provided for retrieval. If categories are too broad, the searcher must manually examine a large number of citations to satisfy a specific

---

[†] Keyed entries by user are shown in quotation marks to distinguish them from command key entries.

```
            EXPAND IT=INTERACTION
REF         DESCRIPTOR                   TP     CIT   RT
E01     IT=INTER INSTITUTIONAL
            PROGRAM DEVELOPMENT .....            1
E02     IT=INTER ITEM CORRELATION
            COEFFICIENTS ..............          1
E03     IT=INTER NATION
            SIMULATION ................          2
E04     IT=INTER-AMERICAN TESTS
            OF GENERAL ABILITY ........          1
E05     IT=INTER-UNIVERSITY
            PROJECT ONE ...............          3
E06    -IT=INTERACTION ................        282     9
E07     IT=INTERACTION ANALYSIS .......          2     1
E08     IT=INTERACTION ANALYSIS
            SCALE .....................          1
E09     IT=INTERACTION OF
            MATTER AND ENERGY .........          1
E10     IT=INTERACTION PROCESS ........          1
```

FIGURE 3. *Display of alphabetically near terms to "INTERACTION."*

subject interest. If categories are narrow, the number of catalog entries becomes unwieldly to use. In the traditional catalog, there is no way of combining categories at search time to provide broader or more specific categories.

In designing DIALOG, it was desired not only to provide the user a means of reviewing the citations within a particular category, but also to allow him to define dynamically his own categories by logically combining the results of several individual categories. This function was provided in the COMBINE command. With COMBINE the searcher can combine any number of citation sets in any logical manner. Continuing the above example, assume the user is interested in the interactive use of computers in information retrieval. He might go through the following steps:

	Terminal output		
Command entered	Set No.	No. in set	Description of set (+=or,*=and, −=not)
SELECT "COMPUTERS"	1	558	COMPUTERS
SELECT "INFORMATION RETRIEVAL"	2	441	INFORMATION RETRIEVAL
COMBINE "1*2"	3	72	1*2
SELECT "INTERACTION"	4	282	INTERACTION
SELECT "MAN MACHINE SYSTEMS"	5	93	MAN-MACHINE SYSTEMS
COMBINE "3*(4+5)"	6	17	1*2*(4+5)

In the above illustration, the user combined concepts of "COMPUTERS" and "INFORMATION RETRIEVAL" into a single category containing 72 items. He

```
        EXPAND IT=INTERACTION
REF     DESCRIPTOR                      TP   CIT   RT
R01   -IT=INTERACTION ...........             282    9
R02     IT=INSTRUCTIONAL
        INTERACTION ...............     1      2    1
R03     IT=RELATIONSHIP ...........     3     80   30
R04     IT=AUDIENCE
        PARTICIPATION .............     4     14    3
R05     IT=INTERACTION PROCESS
        ANALYSIS ..................     4    332   12
R06     IT=INTERGROUP RELATIONS         4    172    8
R07     IT=INTERMODE
        DIFFERENCES ...............     4     22    5
R08     IT=INTERPERSONAL
        COMPETENCE ................     4    188   21
R09     IT=MAN MACHINE SYSTEMS          4     93   12
R10     IT=STATISTICAL ANALYSIS         4    768   24
```

FIGURE 4. *Display of related terms of "INTERACTION."*

decided that he could be more specific, and so he combined this result with a new concept made up of categories "INTERACTION" or "MAN MACHINE SYSTEMS" which were obtained from the display shown as Figure 4. This example can be developed as the cumulation of a series of very simple steps.

Scanning the titles of entries under a particular subject category in the traditional card catalog allows the user to select specific citations of interest. Frequently, however, other subject entry points for a particular item are not included on the catalog card, which denies the user the information he needs to explore other related areas of interest which might be suggested by the citation.

The DISPLAY command in DIALOG was designed to allow the user to review intermediate results. Of several formats available, that most frequently used provides a display of the entire citation including all assigned descriptors and a descriptive abstract if available (see Figure 5). Supplying the full citation not only enables the user to evaluate the relevancy of his search to that point, but it also shows him alternative descriptors he can explore or can include (using the COMBINE command) with other previously developed categories. Figure 6 shows the associated abstract that may also be displayed.

When the card catalog user finds relevant citations, he copies down their call numbers for use in obtaining the associated documents. If he wishes to develop a bibliography for future use or publication, he is relegated to copying manually the entire citation of each selected entry.

Two output commands are provided the DIALOG user which are identical except for the target device. PRINT outputs indicated sets of citations to the high-speed printer at the computer: TYPE similarly outputs to the low-speed terminal printer. Normally the user will output accession numbers to the local printer for use in obtaining hard copy, and he will use the high-speed printer at the computer for the output of extensive bibliographies.

```
ED064431    EM007609
AN INTERACTIVE INFORMATION RETRIEVAL SYSTEM;
CASE STUDIES ON THE USE OF DIALOG TO SEARCH
THE ERIC DOCUMENT FILE.
  TIMBIE, MICHELE; COOMBS, DON H.
  STANFORD UNIV., CALIF. ERIC CLEARINGHOUSE
  ON EDUCATIONAL MEDIA AND TECHNOLOGY
  RMQ66000
  DEC 69
  90P.
  EDRS PRICE MF-$0.50 HC-$4.60
/COMPUTERS/ *EVALUATION/ *INFORMATION RETRIE
VAL/ *INFORMATION SYSTEMS/ INFORMATION THEOR
Y/ INPUT OUTPUT DEVICES/INQUIRY TRAINING/ IN
TERACTION/RESEARCH/ *SEARCH STRATEGIES/
```

FIGURE 5. *Display of full citation.*

At present most library collections are not available in machine-readable form. Provision has been made in DIALOG for each citation to be associated with a second record. This record can be an abstract or it can be the entire text of a document.

Of more practical interest at the present is interface to automatic microfilm equipment. DIALOG has been used with several of these devices, any of which can contain full document text.

In practice, DIALOG provides the user an easy-to-use command language that extends rather than replaces the concept of the traditional card catalog. DIALOG extends this concept by providing a means of combining subject/categories and by providing the clerical facility for storing, cumulating, and printing desired citations in a variety of formats.

The initial application of DIALOG occurred early in 1967 when a DIALOG terminal was installed at the NASA Ames Research Center, Moffett Field, California. The system was used to conduct on-line searches of the NASA document citation collection which at that time numbered some 300,000 records. This data base was stored in a mass storage device at the Lockheed Palo Alto Research Laboratory, and communication was conducted over a telephone line. During this first application, DIALOG was used principally by engineers and scientists directly. During the second phase of the NASA application the terminal was relocated to NASA Headquarters in Washington, D.C. for 12 months. By this time the file had grown to 450,000 citations, the largest bibliographic collection of document citations searchable in an on-line, interactive mode. DIALOG was used principally by librarians during this second phase. Usage differences between the first and second phases were analyzed in a final report submitted to NASA (*1*).

Lockheed has recently completed a contract with NASA to develop and install a version of DIALOG known as NASA/RECON (Remote Console). NASA/RECON is currently in daily operation on a NASA computer servicing twenty-three terminals

```
ED034431
THE FIRST INTERACTIVE (ON-LINE) COMPUTERIZED
USE OF THE ERIC FILES BY THE U.S. OFFICE OF ED-
UCATION IS REPORTED IN THE FORM OF AN EVAL-
UATION OF THE DIALOG SYSTEM CONDUCTED AT
THE ERIC CLEARINGHOUSE FOR EDUCATIONAL
MEDIA AND TECHNOLOGY. DESCRIPTIONS OF THE
PURPOSES OF THE STUDY OF THE DIALOG SYSTEM
(DEVELOPED BY LOCKHEED MISSILES AND SPACE
CO.), AND OF THE PROCEDURES INVOLVED IN CON-
DUCTING A SEARCH OF THE ERIC FILE USING DIA-
LOG ARE FOLLOWED BY INFORMATION ON THE NINE
PEOPLE, FROM VARIOUS AREAS OF EDUCATION, WHO
WERE ASKED TO HELP EVALUATE THE SYSTEM. THE
MAJOR PORTION OF THE REPORT, CONSISTING OF
NINE CASE STUDIES, IS BASED ON THE REACTIONS
OF THESE EVALUATORS (GATHERED IN DEBRIEFING
INTERVIEWS) TO ONE OR MORE DIALOG SEARCHES
WHICH THEY THEMSELVES CONDUCTED. IN ADDI-
TION, 19 EVALUATIONS (BASED ON QUESTIONNAIRES
FROM OTHER SYSTEM USERS) ARE PRESENTED.
THESE, ALONG WITH THE NINE ORIGINAL EVALUA-
TIONS, STRESS THE SPEED AND "HORIZON-WIDEN-
ING" EFFECT OF THE SYSTEM. A FINAL SECTION EX-
AMINES THE VARIETY OF USES FOR THE SYSTEM AT
THE CLEARINGHOUSE. THE PRE-DIALOG QUESTIONS,
THE DEBRIEFING OUTLINE, AND RECORDS OF THE
EVALUATORS' SEARCHES ARE APPENDED.
(SP/MT)
```

FIGURE 6. *Example of displayable abstract.*

located in NASA facilities across the country. Lockheed installed and maintains another version of this system in Europe for the European Space Research Organization (ESRO). ESRO supports terminals in several European countries from a central computer facility in Germany (*2*).

During the past 2 years Lockheed has supplied remote terminal retrieval services to three Office of Education facilities with the Education Research Information Center (ERIC) files (*3*), and four Atomic Energy Commission facilities with *Nuclear Science Abstracts*.

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ROGER K. SUMMIT

Appendix F

THE PROBLEM OF RESOURCE SHARING

Appendix F

THE PROBLEM OF RESOURCE SHARING

While the concept of a central search facility is appealing from the point of view of obtaining a "critical mass" of searches and using skilled searchers, it is important to indicate the important problem of resource sharing. We therefore present below the remarks of David C. Weber, Director of the Stanford University Libraries, and a member of the Cooperative Information Network (CIN) Board of Directors, as given in News Notes of California Libraries, Vol. 70, No. 1-4, 1975.

> In some ways the CIN Board of Directors has found the most frustrating aspect to be the lethargy of professional staff at the circulation or reference desks of our libraries, whether they be large or small. The public do not always seem to be the group which needs to be convinced of resource sharing; the librarian and senior clerical or technical staff who conduct our front desk operations seem the weak link. Some of them are of course superb. Nevertheless it has been appalling how much evidence accumulates that when a request is made for information, the answer is often "this is all we have" or "you would have to try some other library" or "we do not have the current information but these three items from our collections may provide you with some help." True it is that the staff is often very hard pressed. All of us feel short of staff, and we are spread over very long hours. However, if we are to use shared resources the service staff must take that extra step to tell the patron "but in 24 hours I can have it from a special library in this area," "may I obtain it in photocopy from the Leo Library in Louisiana" or "if you can give us a week, we can borrow that particular edition from one of these three libraries and it will be here next Thursday between 4 and 5 o'clock."

Resource sharing requires an aggressive attitude, and it involves a lateral thinking process. A good deal of effort by the CIN staff has gone into spreading the message to service librarians of what resources there are right around the corner, how the CIN network can be made to help them meet the needs of their patrons. Circulation and reference librarians may be very good in a traditional process but on the whole they do not do well when measured against the demands of operating in a fully effective sharing network. Here seems to be an area where library schools need to teach a different operational attitude than may have been previously adequate. Continuing education programs for staff development of those who interface with these cooperatives seem an urgent need.

Appendix G

COMMENTS OF OVERSIGHT COMMITTEE MEMBERS

We invited members of the Oversight Committee to comment on the DIALIB project and/or other topics that they felt were pertinent to online retrieval in the public library. We felt that as critics and reviewers of the study for the past 3 years, they were in a unique position to provide additional insight and evaluations.

G.1 VIRGINIA ROSS GELLER, GELLER AND ROSS, LIBRARY CONSULTANTS, REDWOOD CITY, CALIFORNIA

This is an interesting and significant project which has provided an opportunity for public libraries to experiment with computer-assisted reference service. As is the case with many demonstration projects, the service was regarded as something separate and distinct from the regular activities of the library. In this case, the tendency for such thinking was increased because use of the service required a new technique for accessing information. Because of this attitude toward the project, the potentials, requirements, and contingent problems of online data base searching appear not to have been considered in the framework of the library's overall goals and objectives. I believe it is significant that only two of the librarian participants make any mention of relationship to goals and objectives in their comments relative to DIALIB. Reference personnel usually seem to have regarded it as something aside from their normal reference service and most of the participants seem to regard online data base searches as a new function rather than as another means of performing a reference search.

I believe the study could have provided more useful information if there had been provision during the last 2 years for library supported searches so that the reference librarians could have more fully explored the reference potential of computer-assisted reference searches in their particular settings. Once the patron fee was established, the librarians lost the ability to make discretionary use of DIALOG when they considered this the best means of answering a question. Conversely, they might have to make a nonproductive search if the patron was insistent in his desire for such a search. Provision for discretionary use would have added a useful dimension to the project. Although there was provision for free "demonstration" time, this was intended for use in learning new data bases and for providing demonstrations and was not available for conducting patron searches.

As an observer of the project I have been disappointed and concerned that the public library Administrators did not appear to have a clearly thought-out rationale for the imposition of user fees for DIALOG searches. Without such a rationale I believe there is a definite possibility that a local government, in its search for ways to reduce taxes, may pursue the user fee concept in a manner ultimately harmful to the general public's access to more traditional aspects of public library services and resources. Moreover, failure to recognize the increased level of service made possible by computer-assisted reference service, and to evaluate cost in relation to benefits, could very well result in curtailment of the public library's ability to move ahead with new developments in resource availability. The easy acceptance of the user fee for these services makes it appear as though the library administrators had already made a predetermination that the technique of online data base searching and the resources thus available were really not appropriate to the public library. In my opinion, this is a narrow and very short-sighted view.

I am also disappointed that the project did not fully take advantage of the opportunity to explore the use of online data base search in a network framework. In view of increasing emphasis on library networking and continued limited availability of public library funds, it appears likely that public library access to data bases such as DIALOG will be furnished by a few libraries on behalf of network members; thus the patron access will be indirect or deferred. Terminal installations in the project were well suited for exploration of this aspect: San Jose, Cupertino, and Redwood City had heavy "walk-in" traffic; the San Mateo County installation had little "walk-in" traffic but served as headquarters for a network of branch libraries and also was accessible to the seven member libraries of the cooperative Peninsula Library System. Although the study takes note of some of the problems inherent in "indirect" access, I believe much more attention should have been devoted to this aspect. The data seem to indicate that the service was not used in a truly network manner, i.e., as a service to independent members of a cooperative system. For example, of the total "indirect" requests reported for San Mateo County, only six of 165 came from System member libraries. Although Redwood City Public Library patrons were eligible to use San Mateo County Library for data base searches, no such use is reported. Redwood City had a very high usage during their participation in the project; it would seem logical to have redirected this patronage when the Redwood City terminal was removed a year prior to the end of the project, particularly so since the Redwood City staff was familiar with the data bases and the search strategy. An investigation of why this was not done would have been instructive.

The difficulties of obtaining effective utilization by staff in outlets remote from the terminal is noted, but it would be useful if the study had devoted more attention to efforts and techniques to encourage such staff to make effective utilization and viable referrals to the terminal access point.

The need for training and continuing education to maintain professional competence in the changing technology and state of the art of the library field is clearly demonstrated by this project. Librarians should emulate other professions such as law, medicine, and public administration, and work to secure such update training as an accepted part of their professional status.

In summary: it is unfortunate that the "fee for service" aspect has confused the issue by diverting attention from the more basic aspect, which is the value of computer-assisted reference services for public libraries. The basic question is whether this is a tool which public libraries should add to their other bibliographic tools for accessing resources. I believe this study gives a positive answer to that question and provides constructive guide lines to other libraries seeking to use this means to enlarge their service and resources.

G.2 DOUGLAS FERGUSON, HEAD, DATA SERVICES, STANFORD UNIVERSITY LIBRARIES

The DIALIB Project was a field study and not in any sense a designed social experiment. Several choices were made to move the project forward within the context of working libraries. Many alternatives were not explored, but alternative ways of making online reference service work were revealed. For me this is the main value of this project. It illuminated problems in introducing an innovative service into publically funded organizations. It revealed various policy decisions and operational choices. It showed the critical importance of individual motivations and attitudes in the change process.

The project suggests alternatives in funding, in operation, and in marketing computer-supported reference service. These alternatives apply not just to public libraries but to libraries in public and private educational institutions and possibly to other types of information service organizations. The following observations should be considered to have the usual wisdom of 20/20 hindsight and the humility of the bystander discussing the lightness of other peoples' burdens.

Funding Alternatives

The record does not show that the project participants actively considered funding alternatives such as price-free service or fully user-supported funding. Price-free service would have been in the public library tradition. Perhaps because of the original project proposal and structuring, price-free service was not considered a viable alternative. It is my personal and professional belief that computer-supported reference service can be offered on a price-free basis in public and academic libraries and that this is not only a viable but a desirable alternative WHEN THE LIBRARY SEES IT AS SUCH.

The same constraints and choices apply to traditional reference service as apply to computer-supported reference service. When the similarities rather than the differences are emphasized, a price-free service structure can be made to work. The false dilemma that plagued the thinking of many of us, and I emphasize that this included myself, was not free versus fee service but total versus balanced access to service. No library offers unlimited access to its resources or facilities. Every library choses what sources, how much staff time and talent and what access conditions it will offer to the public – and so does virtually every other public service organization. If we select which printed indexes we can afford, why can't we select which data bases we can afford? If we select staff and books on the basis of the subject emphasis that meets the central needs of our clientele, why can't we select data bases and train staff on the basis of our primary subject commitments? If queues form at reference desks and on phone lines and people are served on a deferred basis ("all operators are busy, your call will be taken in the order received...") why can't online searches be handled on a first-come and then deferred basis? If we chose not to attempt to answer certain types of questions (e.g., legal, medical, puzzles) why can't we decide those types of questions for which we cannot do online searches?

The list of analogous questions can go on to each aspect of how information service is offered. But isn't this a negative approach, always stressing limits or what we will NOT do? Perhaps, but it seems to me that what results from these choices is a type of service that balances available resources across a spectrum of library services. By carefully monitoring the results of these choices, such as service backlogs or unanswered requests, we have the basis for reallocating people and money resources and for supporting budget requests.

The professional literature is recording a discussion in which the problems of fees and the rationale for price-free service is well represented and I will not add to it. I emphasize, at a minimum, the common-sense practicality of price-free service but not its iron necessity. Furthermore it seems to me there are pragmatic benefits of price-free service, in terms of extending access, removing unproductive accounting activities, and building a broad base of professional experience and clientele support. The project report suggests decision areas that could lead to structuring a price-free service around selected data bases, using selected staff, under conditions that permit the operation of a balanced reference service. Librarians and library managers do have scope for choice in funding computer-supported reference service. Price-free service has not been tried and found wanting; as Shaw said about Christianity, it has been found difficult and not tried.

Improved Operations

The project did not explore but it did suggest the way in which online sources could be used to assist with the major types of information requests faced by a public (or academic) library reference service. Data bases can be appropriately used to answer fact or brief response questions (e.g., estimates of the volume of pocket calculator sales in 1980), to answer short topical questions (e.g., a few recent articles on appropriate technology), as well as to answer questions requiring extended subject searches. It may have been a missed opportunity when the libraries did not plan to try limited use of data base searches with daily on-demand reference requests. Even though data base sources were not systematically used with differing information tasks, they are clearly applicable especially as the data base repertoire expands. Furthermore, as online sources become more common in daily reference activities it will become important to develop and test guidelines for the appropriate use of printed and computerized sources in responding to information requests. The guidelines would help to determine when computerized sources alone might most effectively produce a result, when printed sources alone might produce the desired result, and when both computerized and print sources are likely to provide an appropriate response. The advent of an online reference collection may hasten the refinement of guides to query negotiation and source selection that are beginning to appear.

I am speculating that online sources will be an accepted and common part of most library reference activity within the next 10 years. If this happens, librarians can become a significant force in improving data bases and access methods by applying critical standards to these information sources just as they would to other kinds of information sources. Equally as important will be the necessity to develop practical ways of determining the quality or goodness of the results we produce from data bases. Systematic sampling for analysis, peer group search autopies, and settings to which problem searches can be brought, are examples of the kinds of professional and organizational incentives that are needed to produce a peer-based approach to service quality and professional accountability.

Markets and Marketing

The project is rather limited in the extent to which it reveals the market structure for online reference service. The market structure for various goods and services of public libraries has not been explored in any depth. It may be asking too much for computer-supported reference service to pioneer in market analysis. A study of nonusers of computerized literature searches would contribute to answering several questions: (1) Are fees a deterrent to use, to whom are they a deterrent, and what conditions would bring about active use? (2) Is the nonuse based on lack of need, lack of awareness of the service or problems in gaining access to the service? and (3) Are nonusers predominantly part of groups to which the library and the community gives a high service priority, such as ethnic or disadvantaged groups? Nonuser information along with information on service users would help structure pricing, service design, and promotion decisions.

Most marketing promotional approaches were tried in the project at least once and they ranged from direct mail to public relations approaches to the media, to direct sales approaches in the form of live demonstrations. The problem of service overload, whether feared or actual, dominated the situation, so promotional approaches that go beyond the present library market were not tried. The problematic character of promotional activities extends beyond libraries to most tax supported service organizations. If an organization successfully promotes its services, it increases demand. Increased demand, in organizations without pricing mechanisms, does not result in more resources to keep up with demand. Hence service degrades and more people are brought in by promotion only to be disappointed by what they get or don't get. Furthermore, there is no tradition of promotional budgeting in most city agencies and public employees may rightly be responding to a belief in the public and in elected officials that public agencies should spend money on their substantive services not on advertising. Public promotional money must be initially tied to a high priority service, must be focused on specific target groups, and must be low in cost. Building a promotional budgeting base and in-house promotional resources takes years and they must always be rejustified and kept lean. This is not all bad since most advertising researches say they don't know what works and doesn't work with any degree of assurance. Meanwhile a great deal of money can be spent. To paraphrase Baron Rothchilds, there are three ways to spend a great deal of money, gambling, fine wine, and advertising. The first two are the pleasantest, but the last is by far the most certain.

If marketing is basically four clusters of decisions – pricing decisions, promotion decisions, delivery decisions and design decisions – the last is the most problematic for tax supported organizations. Designing goods, services, or products to meet clientele requirements is easy to say but it implies a great deal more flexibility and resources than most public agencies have. The public image of what public agencies should provide controls the content and format of public services, and libraries are no exception. In part this accounts for why the participants in this project, along with almost all libraries, present the service basically in terms of a computer-produced bibliography. Again, as data bases become more like Ford's and less like Maserati's, imaginative service designs will be produced. They will be sets of analytic techniques, interpersonal skills, and computer processing available for unique and recurring information tasks of the library's various client groups. The DIALIB Project has contributed to conceptualizing and creating the conditions for this kind of public library information service.

G.3 FORREST F. CARHART, JR., EXECUTIVE DIRECTOR, NEW YORK METROPOLITAN REFERENCE AND RESEARCH LIBRARY AGENCY (METRO)

This was an important project, and was successful in providing most of the sought for answers to the following questions:

- Is computer searching of value to public library patrons?
- What is the impact of computer searching on the library and the library patron?
- What conditions are required for successful use of computer searching?
- Are there special financial or marketing considerations?

The astute librarian reading this report will consider the experiences here neither the norm for libraries nor atypical. The size of library, population served, membership in consortia, etc., necessarily impose qualifiers on policies, practices, reactions of patrons and staff, and any conclusions which may be extrapolated. It is obvious, I think, that much of what was learned could be transferred with discretion to other libraries. It would be fair to say that changes which may come about from the utilization of computer searching will be evolutionary rather than revolutionary. A receptive staff will benefit from this augmentation of their skills.

The public library's role as a linking agent would seem now to be self-evident. When our questions were posed 4 years before the end of the project term, the answers were not clear. In fact, this program provided part of the proof that public libraries are a logical place in which to locate terminals for literature searching. Terminals are now commonplace in libraries which have a demonstrated need for them.

There is no fundamental difference between doing a manual search and a computer search. The principles of searching are the same. The "difference" most often cited is not related to the technology but relates to the services customarily provided by a library. The role of the individual library in information transfer (reference work) is affected by such factors as whether it is a small suburban or large urban library;

whether the area served is located near research and high technology communities; whether the library serves mainly the recreational reading needs of a retirement community; the extent to which the public library participates in cooperative programs with nearby libraries and utilizes such referral and support opportunities; etc.

The above factors (and others) lead to a question of degree — to what extent is the library accustomed to performing in-depth literature searches for its patrons? The library which is unaccustomed to in-depth searching may find computer-assisted searching an overwhelming procedure in the beginning. However, it is my opinion that most librarians have fallen into bad habits when doing reference work. The computer-assisted search forces the librarian to do a thorough reference interview before the search begins, rather than raising questions as the search proceeds. In fact, computer-assisted searching is good training and discipline for manual searching because of the required precision of the reference interviews.

Most indexes printed on paper and their counterpart computer indexes are used in the same way. In fact, many originated as printed indexes and use the same list of subject headings (thesauri). As is the case with printed indexes, each field of knowledge has its own subject headings and literature searchers are accustomed to using different sets of terms in printed indexes. The same can be said of computerized indexes.

The study showed that cooperative use of a terminal is possible and provides no bar to good service. At the same time, it was shown that not every library needs a computer terminal for literature searching just as not every library needs a hardpaper copy of Chemical Abstracts. Libraries have always been interdependent in these matters (hard paper) and they can be interdependent in terminal usage. A parallel experiment in New York has shown that no library having a terminal will be overrun by patrons of another library. A library making heavy use of another's terminal will soon find such a situation so inconvenient that it will obtain its own facility. The shared use of a terminal provides an opportunity for a library to gain experience and data to support budget requests for a separate terminal.

In this study, it was not possible to compare costs between manual and computer searches. This could only have been done if the libraries had previously routinely conducted in-depth manual searching. Since this was not the case, the advent of the terminal provided an entirely new dimension to the service of these libraries. This fact is so basic that it pervaded all activity in the study period and colored many of the comments collected by the evaluation team.

The pattern of this study provided a progression from "free" searches to "fully" paid searches. In retrospect, this would not have been necessary for public acceptance and if the 3 years had been entirely a "fully" paid period, we might have been able to evaluate other variables. It is my feeling that the gradual buildup to "full" charge was for the library staffs' fears which proved to be unfounded. It is likely that it would have been less trying to the library staffs if the reduced charge periods had never been instituted. I certainly would not recommend such a practice again.

We learned some things about the impact of computer-assisted searches in relation to the patron but missed a golden opportunity to learn more. As predicted, a computer search saves much time. The most dramatic demonstration of this was the heavy use by students. They could see the efficiency of using the terminal and its attendant costs versus the money they could earn in the time a manual search would have consumed.

It was significant that some patrons returned for additional searches. That more did not is not significant. Except in industrial laboratory investigations (special libraries) and similar situations, it is most unusual to have a general patron return for additional in-depth searching.

Unfortunately, the evaluators did not investigate the reasons for reported dissatisfactions. For example, we do not know whether the patrons were unhappy because no citations were found and whether any citations should have been expected. We do not know whether the questions were sharply defined or too narrowly stated. We do not know whether appropriate data bases were searched. In general, we can say that dissatisfactions reported by the evaluators are also reported from manual searchers in hard-paper indexes. More often unhappiness is in frustration or disappointment based on unfounded hope. In some cases, particularly those relating to doctoral candidates, the replies received may have been a response to a poorly worded question. Such a student may very well turn up no citations in his searching but at the same time this can be a happy result – he has found a topic upon which he can build his doctoral research.

The impacts which may be expected in libraries will vary according to the nature of the library and the community it serves. If we think of computer-assisted searches as a natural augmentation of our already highly developed sense of service and fine-tuned capabilities, most of the "impacts" are entirely predictable such as: the possible necessity to rearrange staff schedules to allow pre-search interviews with the patron; scheduling of time for more intensive training for the utilization of new reference tools; necessity for training all staff for an attitude of support, not simply a grudging acceptance; as well as similar administrative problems most of which we should have faced long ago in our manual search days.

One item which has been labeled a problem has in recent months been raised into a highly emotional cause célèbre – an unfortunate occurrence. This has to do with whether a library should or may charge the patron a direct fee for this or any service. I think the study responds to this question although the evaluators failed to probe sufficiently to write convincingly on the topic.

It is unfortunate that some well-meaning persons have raised shiboleths in the guise of philosophical issues. There is not much doubt that all library administrators would like to offer all services without direct charge to the immediate user. But when a service is needed (demanded) and normal sources of funds are not available, there is no other recourse. To charge is not to deny service because we do offer the same service, albeit a slower procedure. The patron makes his choice – cheap and slow or fast and for a fee. We've done this for years. We have sold ink for pens, ball point pens, writing paper and, more dramatically, have provided photocopying services for a fee. At the same time, paper and pencil have been available to facilitate manual copying. Choice – cheap and slow or fast and for a fee.

Not only does charging not deny access, it enhances access to those who do need it. It is mainly for in-depth searching, not for simple reference questions. As with photocopying, libraries have found, and this study demonstrated, that controls must be imposed to prevent unbridled and irresponsible utilization of tax dollars for inappropriate use of services, e.g., photocopying.

Indeed, it is not a simple question of charge or no charge. The very act of installing a terminal and the training of staff to use it is a subsidy. Despite the fact that the issues are really hard business issues, librarians are not prohibited from providing (on discretion) certain needed "free" services. Subsidy can be increased in many ways and in an infinite number of degrees (up to total) when fund providers are persuaded that terminals are more necessary than, for instance, garbage collection.

Costs are present, whether they are associated with manual or machine searching. A point to remember in this context is that over a period of time we have often demonstrated that services previously thought to be expensive were reduced in price as volume increased. As a result, libraries have found that they could forego the direct charge for the service. From this study we cannot predict with certainty that history may be repeated here, but I think that subsidies will increase just as they have in the case of coin-operated photocopying.

Staff attitude was mentioned as an impact on the library. We found that the attitude of the library director was reflected in his staff, i.e., whether the terminal was an extra chore or provided enhanced service opportunities. We have made mistakes relating to staff acceptance of microfilm as a normal medium for storage and transmission of information. Public acceptance of microfilm is reflected from librarians' attitudes that "we're sorry, this is all we have, it's inconvenient and we don't like it, but you'll have to get along." Psychological and technical preparation is something that cannot be overlooked if any program is to be successful. User comments may possibly reflect negative staff attitudes.

Persons reading the report of the study should examine carefully the opinions reported from both librarians and users. Readers of the report should ask themselves what might have been the reason for the reactions whether positive or negative. Unfortunately, the report of the study could have been more useful if the evaluators had had some library experience or co-opted such experience in order to probe for significances behind the data and statements which they collected.

The study did demonstrate that the machine augmentation enhanced the ability of the librarians to perform in-depth reference work more efficiently. The study found that these tools are good extensions of printed indexes and abstracts. But – it was also demonstrated that the service, i.e., terminals for searching, should be acquired selectively and cooperatively in the same manner that librarians now select and acquire printed versions of indexes.

The study demonstrated the potential, but did not have the opportunity to truly demonstrate, the real possibilities of using computer-assisted searches in a geographically dispersed area of library service. In parallel studies (METRO) it has been shown that a central terminal installed on behalf of, and used by many libraries, is feasible and useful. Only a lack of understanding of the service potential and a lack of imaginative use of such service will hold back the extension of service. The public library is a linking agent as are all libraries.

Appendix H
AVERAGE COST OF ONLINE SEARCH

A detailed study of the time required to perform various elements of an online search was made by Cooper and DeWath, as reported in Ref. 4 and in the Evaluation Annex volume of this final report. This appendix summarizes the cost data.

H.1 SEARCH ELEMENTS

The search elements used by Cooper and DeWath were:

- Reference interview: time that the user spent negotiating the request with a library staff member.
- Originating library preparation: time in originating library to record, research, and record the request.
- DIALOG library preparation: time spent on the request at the library performing the DIALOG search with no patron present and before performing the online search.
- Online search time: the actual DIALOG search.
- DIALOG library followup: time spent at the DIALOG library after the online search with no patron present.
- Originating library followup: same as above, but at originating library.
- Followup with patron: at either the originating or the DIALOG library, the time spent with patron explaining the results of the search.

H.2 TIME AND COST OF SEARCH ELEMENTS

The time required for each of these elements is shown in Fig. H-1 for the free and pay periods. Because not all the elements are performed for every search, a

SEARCH ELEMENTS	TIME (MIN)		COST ($)		PROBABILITY OF ELEMENT	WEIGHTED COST* ($)	
	FREE	FEE	FREE	FEE		FREE	FEE
REFERENCE INTERVIEW WITH PATRON	10	16	1.12	1.72	0.72	0.81	1.24
ORIGINATING LIBRARY PREPARATION TIME	18	15.5	1.96	1.66	0.11	0.22	0.18
DIALOG LIBRARY PREPARATION TIME	10	18	1.06	1.93	0.54	0.57	1.04
ONLINE RETRIEVAL SERVICE COST	23	16	17.35	11.60	1.0	17.35	11.60
PRINTING OF CITATIONS			8.83	10.87	0.67 (FREE)*	5.92	8.91
SALARY COST FOR ONLINE TIME			2.43	1.74	1.0	2.43	1.74
FOLLOWUP TIME FOR DIALOG LIBRARY	12	14	1.26	1.53	0.74	0.93	1.13
FOLLOWUP TIME FOR ORIGINATING LIBRARY	11	11	1.08	1.21	0.10	0.11	0.12
FOLLOWUP WITH PATRON	8	10	0.81	1.15	0.42	0.34	0.48
TOTALS						28.68	26.44

*0.82 (PAY)

Fig. H-1 Average Cost of Online Search, Showing Free and Fee Periods probability of each element is shown. For example, the originating library seldom expends time preparing the search and therefore the probability of that element is low, 0.11, while the probability of a reference interview is high, 0.72. When the cost of each search element is multiplied by the corresponding probability, we obtain the weighted cost shown in the right-most columns.

The sum of the weighted costs for the free period is $28.68 per search, and for the pay period is $26.44 per search. This decrease in cost from the free to the pay period is due to the decrease in online search time from 23 to 16 minutes.

Figure H-2 shows the costs grouped into "librarian salary," "online cost," "print cost," and "totals" for the free and pay periods. It can be seen that the search service costs represent about three-quarters of the total cost of a search.

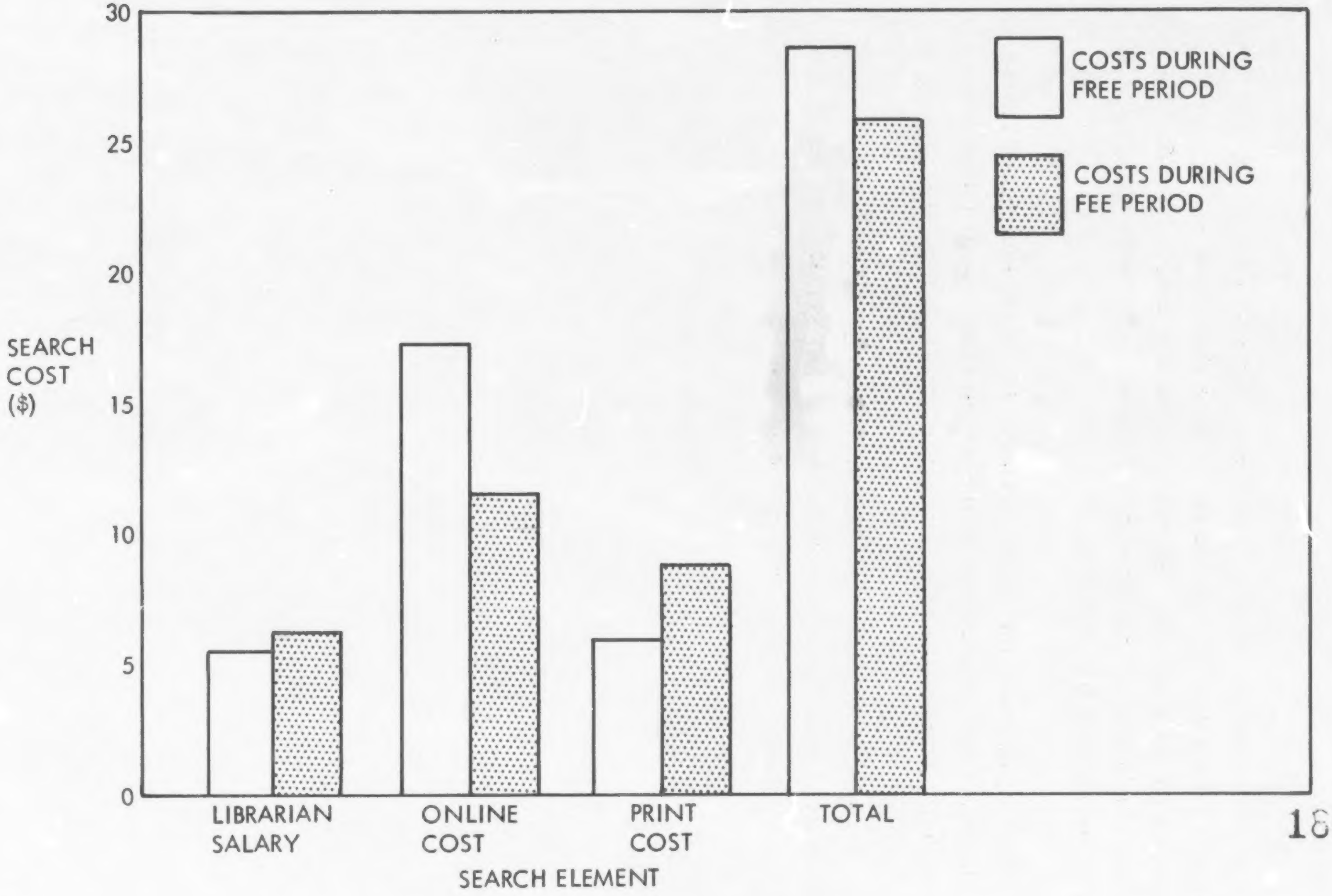

Fig. H-2 Average Cost of Online Search for Free and Fee Periods

Appendix I

MEETINGS AND PAPERS

This appendix presents a list of the meetings held and indicates the kind of coordination required in a project such as this. A list of papers presented indicates the dissemination of knowledge concerning the project.

I.1 COORDINATION MEETINGS

May 17, 1974. Description of study to CIN meeting, Palo Alto, Cal.

June 17, 1974. Discussion of agreements with participating library heads. These agreements were to be signed by the respective cities and counties, and Lockheed.

July 11, 1974. Applied Communication Research made a presentation concerning the data gathering plan at a training session for the librarians.

July 30, 1974. General meeting of participating libraries to discuss initial experiences with the system.

August 2, 1974. Arrangements for opening ceremonies, San Jose.

August 6, 1974. Publicity Committee meeting at which a recommendation was made to employ a publicity coordinator.

August 15, 1974. General meeting of participating libraries to discuss experience to date and review revised evaluation plan.

August 22, 1974. Opening Ceremonies at San Jose Public Library attended by city dignitaries, City and County librarians, and NSF and Lockheed representatives.

August 23, 1974. Oversight Committee meeting to review progress to date.

September 12, 1974. The heads of the participating libraries met at the San Mateo Educational Research Center (SMERC) Redwood City to discuss policy matters including possible limitations in the use of the system and the problem of fee for service. A Pricing Policy Working Group was established by the libraries to deal with the latter question.

October 10, 1974. Reference librarians from the participating libraries met at the Redwood City library to discuss publicity, the evaluation questionnaire, and to share their experiences with the system.

October 24, 1974. Ferguson, Helmer, and Firschein met at Stanford to discuss the marketing effort status and strategy. In-library publicity was to be stressed until after January 1, a saturation campaign was planned for one community in January - February, and some in-library media presentations were considered.

October 25, 1974. C. Mick and A. Ahlgren (ACR) met with R. K. Summit and O. Firschein to discuss the user questionnaire and the evaluation plan.

October 27, 1974. Frances Grant conducted an additional training period for reference librarians of the participating libraries to bring them up to date on some of the new data bases and to show some advanced search techniques.

November 21, 1974. CIN Presentation, Skilling Auditorium, Stanford University R. K. Summit, O. Firschein, F. Grant, Lockheed; N. DeWath, San Mateo County Library).

January 16, 1975. Meeting of the librarians at Redwood City. The Cooper/DeWath time study was discussed and Alice Ahlgren of ACR discussed the mechanics of questionnaires.

February 3, 1975. Meeting of Oversight Committee Review of ACR evaluation material and the fee-for-service policies to be used by the libraries.

March 19, 1975. Meeting at San Jose Public Library to review the Cooper/DeWath study.

March 1975. Heads of libraries met and requested a subsidy because of unexpected personnel costs.

April 7, 1975. Meeting with heads of libraries, CIN, and Lockheed in which a $10 per terminal hour subsidy was proposed for submission to NSF.

June 1975. Meeting of librarians to discuss pay period operation.

November 24, 1975. Oversight Committee meeting concerning the need for planning for the third year of operation at full fee, the need for follow-on studies of nonusers, and the continued collection of time and cost data.

February 1976. Site visit by ACR to out-of-state libraries participating in study.

June 3, 1976. Oversight Committee meeting to review first draft of final report.

June 1977 – October 1977. The Oversight Committee individually reviewed drafts of the final ACR report and the Final Report. Carhart and Firschein met in June, and Geller, Firschein, and Mick; Ferguson, Firschein, and Mick; and Bourne and Firschein met in September. Firschein and Mick met many times to review the evaluation material and to incorporate the comments and critiques into the ACR report.

I.2 PRESENTATIONS AND PAPERS

"Computerized Retrieval Comes to the Public Library," Oscar Firschein, Lockheed Information Systems; Evelyn Helmer, Publicity Consultant; Sally Drew, Redwood City reference librarian; and Nancy DeWath, San Mateo County reference librarian. Bay Area Chapter of the American Society for Information Science, 12 Dec 1974

"Computerized Retrieval in a Public Library Setting," O. Firschein and R. K. Summit, COMCON '75, IEEE Computer Society, San Francisco, California, Feb 1975

"Factors Affecting the Adoption of an Online Service by the Public Library," Alice E. Ahlgren, ASIS Midyear Conference, Portland, Oregon, Jun 1975

"Providing and Pricing Computerized Search in the Public Library," Oscar Firschein and Roger Summit, NSF colloquium, "Strategies for Improving Special Library Effectiveness," Northwestern University, Jun 1975

"Online Retrieval in a Public Library Setting," Roger Summit and Oscar Firschein, Special Libraries Association meeting, Chicago, Jun 1975

"The DIALIB Project," O. Firschein, Institute on Library Service to the Business Community, State University of New York, Albany, N.Y., Jun 1975

"Online Search Services in the Public Library: Project DIALIB," Alice E. Ahlgren, American Library Association Annual Conference, San Francisco, California, 3 Jul 1975

"Providing the Public with Online Access to Large Bibliographic Data Bases," Oscar Firschein and Roger Summit, 2nd USA-Japan Computer Conference, Tokyo, Japan, Aug 1975

"The DIALIB Study," Roger Summit, 1975 Engineering Foundation Conference, Henniker, New Hampshire, 11 Aug 1975

"The Cost of On-Line Bibliographic Searching," M. D. Cooper, N. A. DeWath, ACR-003-75-01, Applied Communication Research, December 1975 (published in a revised form in *Journal of Library Automation*, Vol. 9, No. 3, Sep 1976, pp. 195–208

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